PORSF
11.3.55-3
5/31/2005 DRAFT

SCHNITZER INVESTMENT - DOANE LAKE (AIR LIQUIDE AMERICAN CORP)
CSM Site Summary

SCHNITZER INVESTMENT - DOANE LAKE (AIR LIQUIDE AMERICAN CORP)

Oregon DEQ ECSI #: 395

6529 NW Front Avenue
DEQ Site Mgr: no PM
Latitude: 45.5694°
Longitude: -122.7472°
Township/Range/Section: 1N/1W/13

River Mile: ~ 7.5 West bank

LWG Member ☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only

1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the Schnitzer – Doane Lake/Air Liquide America (Air Liquide) site to the river is summarized in this section and Table 1, and supported in following sections.

1.1. Overland Transport

Contaminant transport via direct overland transport is not considered a pathway of concern at the Air Liquide site. The property is located about 1,000 feet away from the Willamette River.

1.2. Riverbank Erosion

Contaminant transport via riverbank erosion is not considered relevant at this site since the property does not include frontage along the river.

1.3. Groundwater

The Air Liquide site is located approximately 1,000 feet from the Willamette River and upgradient from the Arkema (formerly Atofina) site (ECSI #398). Based on the limited groundwater data available for the Air Liquide site, the primary contaminants of concern in groundwater are lead, arsenic, and calcium hydroxide. No information was available indicating that preferential pathways have been assessed at the site.

1.4. Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)

Historically, calcium hydroxide was discharged into East Doane Lake until 1981. Surface waters from East Doane Lake reportedly drained to the Willamette River via the East Doane Lake 48-inch outfall, although the City storm system was not constructed in this area until 1980, and no information is available to determine how the lake drained to the river prior to this.

Currently, the site has an existing GEN 12Z stormwater permit for industrial stormwater discharges. The stormwater collection system at the site was connected in 2000 to the City stormwater system that discharges into the river at City Outfall 22B (COP 2000). There are no overwater activities at the site.

1.5. Relationship of Upland Sources to River Sediments

See Final CSM Update.

1.6. Sediment Transport

Not applicable.

2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: May 31, 2005

3. PROJECT STATUS

Activity		Date(s)/Comments
PA/XPA	☒	EPA Basic PA – 12/21/1987 EPA PA 2 – 2/12/1988 State XPA recommended – 11/18/1992 PA Equivalent – 8/30/1995
RI	☐	
FS	☐	
Interim Action/Source Control	☐	
ROD	☐	
RD/RA	☐	
NFA	☐	

DEQ Portland Harbor Site Ranking (Tier 1, 2, or 3): Not ranked

4. SITE OWNER HISTORY

Primary Sources: DEQ 2004, Dames and Moore 1987b

Owner/Occupant	Type of Operation	Years
Liquid Air (Air Liquide American Corp)	Leased the plant, manufactured acetylene	1969 - present
Schnitzer Investment	Acetylene manufacturing plant	1949?

5. PROPERTY DESCRIPTION

The site is located on 6.3 acres in a heavily industrialized area of NW Portland. The Willamette River is about 0.25 mile north and east of the site, and Forest Park is about 0.25 mile south and west of the site. The entire site is located on fill, placed between the 1940s and 1970s in what was historically Doane Lake (DEQ 2004).

Properties adjacent to the Air Liquide site include Gould Electronics Inc. / NL Industries (ECSI #49) to the northwest, and American Steel Industries (ECSI #1398) to the south [see Supplemental Figure 1.3-2 from Dames & Moore (1987)]. Northwest Front Avenue borders the Air Liquide site to the north. The eastern Doane Lake remnant, (a.k.a East Doane Lake), formerly extended onto the Schnitzer Investment Corporation property, as shown in Supplemental Figure 1.3-2 from Dames & Moore (1987).

6. CURRENT SITE USE

The facility is currently operated by Air Liquide America Corporation for manufacturing acetylene on property leased from Schnitzer Investment Corporation. The property was also the location of auto shredder waste disposal from other Schnitzer facilities. The facility is currently listed as a hazardous waste generator (DEQ 2004).

7. SITE USE HISTORY

Dames and Moore (1987b) reported that the Air Liquide facility has been in service since the early 1940s. The plant was constructed between 1940 and 1948 for manufacturing acetylene gas. Other industrial gases were also received in bulk from outside sources and were distributed from this site (Dames and Moore 1987b). The production of acetylene gas is generated from mixing calcium carbide and water. Calcium hydroxide (hydrated lime), a byproduct of this process, was discharged into East Doane Lake until 1981 (DEQ 2004). The material was later placed in a diked holding area adjacent to the East Doane Lake remnant. An effort was made to reclaim lime from the lake remnant for an unspecified amount of time. At some point during the 1980s, Liquid Air Corporation began storing the lime byproduct in tanks for resale (Dames and Moore 1987b).

Site stormwater was discharged to East Doane Lake until 2000, when the site connected to the City stormwater conveyance system that discharges to City Outfall 22B (COP 2000). It is unclear how East Doane Lake was connected to the Willamette River. The City constructed a stormwater collection system along Front Avenue in 1980; prior to this, there was no public stormwater system in the area and no information is available to determine how the lake drained to the river. After the City system was constructed in 1980, there are no records (i.e., plumbing permits) for stormwater connections to the system from either the Schnitzer – Doane Lake/Air Liquide site (except for the 2000 connection discussed above) or the adjacent Gould site (COP file review – Dawn Sanders, May 2005). A recent RPAC TV survey of the Outfall 22B conveyance system (MRP 2004) showed a connection to the City storm system adjacent to the Gould site; when this connection was made is unknown.

8. CURRENT AND HISTORIC SOURCES AND COPCS

The understanding of historic and current potential upland and overwater sources at the site is summarized in Table 1. The following sections provide a brief overview of the potential sources and COPCs at the site requiring additional discussion.

8.1. Uplands

Potential upland sources on the Air Liquide property include the following:

- Historic fill material in the former East Doane Lake remnant consisting of metal slag, scrap metal, demolition debris, silty hydraulic dredge spoils, rock quarry spoils, shredded automobile interiors, shredded battery casings, and carbide sludge (Dames & Moore 1987b). DEQ (2004) also noted that Schnitzer disposed of non-magnetic auto shredder wastes on the site, although the exact location or duration of disposal was not noted.
- Surface, subsurface surface water, and groundwater concentrations of calcium hydroxide and lead in the area of the former remnant lake. According to DEQ (2004), many measurements of pH were over 12.
- Subsurface soil and groundwater concentrations of acetone and methylethylketone (MEK) in the area of the former acetone UST.
- Subsurface soil concentrations of PCB Aroclor 1254, 1,1,1-trichloroethane (TCA), tetrachloroethylene (PCE) and 1,1-dichloroethane (1,1-DCA) in 3-ft samples from an area contaminated by a compressor oil spill. However, the contaminated subsurface soil appeared to be unrelated to the oil spill.

DEQ (2004) has indicated that further investigation is necessary in the compressor oil cleanup area.

8.2. Overwater Activities

☐ Yes ☒ No

Overwater activities were not considered relevant at this site since the property does not include frontage along the river.

8.3. Spills

Known or documented spills at the Air Liquide site were obtained either from DEQ's Emergency Response Information System (ERIS) database for the period of 1995 to 2004, from oil and chemical spills recorded from 1982 to 2003 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], from facility-specific technical reports, or from DEQ correspondence. These spills are described below.

Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes/no)
2/21/95	Compressor oil	200	Malfunctioning oil/water separator resulted in release of oil (spill surface unknown)	Yes-soil cleanup

9. PHYSICAL SITE SETTING

Available subsurface information in the DEQ files for this site is limited. An RI/FS was conducted at the Gould Electronics site (ECSI #49) and includes geologic and hydrogeologic information for the Doane Lake area including the Air Liquide (Dames & Moore 1987a,b).

9.1. Geology

The site was largely covered by historic Doane Lake prior to receiving fill. The lake occupied a shallow, abandoned channel of the Willamette River (Dames & Moore 1987b). The fill material at the site varies from 10 to 25 feet in thickness [see Supplemental Figure 4.2-4 from Dames & Moore (1987b)] and consists of metal slag, scrap metal, demolition debris, silty hydraulic dredge spoils, rock quarry spoils, shredded automobile interiors, shredded battery casings, and carbide sludge (Dames & Moore 1987b).

Underlying the fill material are Quaternary alluvial deposits consisting of relatively continuous lenses of sand and layers of clayey silt or clay (Dames & Moore 1987b). Basalt flows of the Columbia River Basalt Group (CRBG) underlie the alluvium at a depth of 55 to 95 feet bgs [see Supplemental Figure 4.2-5 from Dames & Moore (1987b)].

9.2. Hydrogeology

Available records indicate that three monitoring wells have been completed at the Air Liquide site as part of the Gould Electronics RI/FS and are located in a cluster along the northeast property boundary. Each well penetrates specific hydrostratigraphic zones: shallow, intermediate, and deep (Dames & Moore 1987b).

Three primary water-bearing units have been delineated at the site: the fill material, the alluvium, and the CRBG (Dames & Moore 1987b). The fill unit is hydraulically connected to East Doane and West Doane Lake, as well as to the alluvial unit beneath it. However, groundwater in the fill does become perched in some areas due to layers of silt and/or clay within the alluvium (Dames & Moore 1987b). Groundwater flow within the fill is predominantly in a northerly direction (Dames & Moore 1987b).

The alluvial unit is hydraulically connected with the fill, East Doane and West Doane Lake, the Willamette River, and the CRBG (Dames & Moore 1987b). The alluvial unit can be divided into two water bearing subunits because the lower alluvium is generally more silty, and thus less permeable than the upper alluvium, which results in slightly differing groundwater levels between the two subunits (Dames & Moore 1987b). Groundwater flow within the alluvium is predominantly in a northerly direction (Dames & Moore 1987b).

Conceptual hydrogeologic cross-sections have been prepared for the Doane Lake Area including the Air Liquide site [see Supplemental Figures 4.2-3, 4.4-5, and 4.4-6 from Dames & Moore (1987b)].

10. NATURE AND EXTENT (*Current Understanding*)

The current understanding of the nature and extent of contamination for the uplands portions of the site is summarized in this section. When no data exist for a specific medium, a notation is made.

10.1. Soil

10.1.1. Upland Soil Investigations ☒ Yes ☐ No

Soil samples were collected in the vicinity of the compressor oil spill, in the subsurface and in the vicinity of the former acetone UST. Results from soil samples collected near the compressor oil spill appeared unrelated to the oil. The deeper layer of soil extended to a depth of 3 feet and contained PCB Aroclor 1254, TCA, PCE and 1,1-DCA. A small area of contaminated soils remains beneath the building. Residual levels of acetone and MEK were present in soils in the vicinity of the former acetone UST. The following table summarizes the level of soil contamination. These data are provided in DEQ's ECSI report (DEQ 2004).

Analyte	Sample Date	Maximum Concentration
Volatile Organic Compounds (VOCs)		
Acetone	9/27/1994	180 µg/kg
1,1-Dichloroethane	3/30/1995	770 µg/kg
Methyl ethyl ketone	9/27/1994	47 µg/kg
Tetrachloroethylene	3/30/1995	530 µg/kg
1,1,1-Trichloroethane	3/30/1995	7,400 µg/kg
Polychlorinated Biphenyls (PCBs)		
Aroclor 1254	3/30/1995	310 µg/kg
Metals		
Arsenic	7/15/1986	180 mg/kg
Chromium	7/15/1986	390 mg/kg
Lead	7/15/1986	230 mg/kg

mg/kg = milligrams per kilogram (ppm)
µg/kg = micrograms per kilogram (ppb)

10.1.2. Riverbank Samples ☐ Yes ☒ No

10.1.3. Summary

Soil samples collected during the compressor oil spill cleanup contained PCB Aroclor 1254, MEK, and chlorinated solvents. Residual levels of MEK and acetone were found in the vicinity of the former acetone UST.

10.2. Groundwater

10.2.1. Groundwater Investigations

☒ Yes ☐ No

Available documents indicate that three monitoring wells, W-16S, W-16I, and W-16D, have been completed at the Air Liquide facility as part of the Gould Electronics RI/FS and are located in a cluster along the northeast property boundary. Each well penetrates specific hydrostratigraphic zones: shallow, intermediate, and deep (Dames & Moore 1987b).

10.2.2. NAPL (Historic & Current)

☐ Yes ☒ No

Available documents indicate that NAPL has not been observed at the site.

10.2.3. Dissolved Contaminant Plumes

☒ Yes ☐ No

The Gould RI identified lead and arsenic at relatively high concentrations in groundwater at the Air Liquide site. However, concentrations of metals have decreased in the area as a result of remedial actions conducted in the source area at the Gould site (DEQ 2004). Historic discharges of calcium hydroxide into Doane Lake, which is hydraulically connected to shallow groundwater, increased the pH levels in area groundwater including at the Air Liquide site. The pH levels were high enough in the subsurface (greater than 12) to increase the leachability of lead and arsenic.

Plume Characterization Status ☐ Complete ☒ Incomplete

DEQ (2004) has indicated that further investigation is necessary in the compressor oil cleanup area.

Plume Extent

The lateral extent of lead in the Doane Lake area was assessed as part of the Gould RI (Dames & Moore 1987b). The estimated extent of total recoverable lead in the fill unit is shown on Supplemental Figure 4.5-14 from Dames & Moore (1987b). More recent groundwater data collected at the Gould site indicates that concentrations of metals have decreased in the area as a result of remedial actions conducted in the source area at the Gould site (DEQ 2004). However, no recent groundwater data (after 1994) were available in the file for the Air Liquide site.

Min/Max Detections

Groundwater analytical data presented below are based on data collected during the Gould RI (Dames & Moore 1987b) and the DEQ's ECSI site summary report (DEQ 2004).

Analyte	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)
Metals		
Arsenic (dissolved)	<5	740*
Lead (total)	<10	3,000*
VOCs		
Acetone	NA	8.1**

NA Not Available
* Samples collected in 1987
** Samples collected in 1994

In addition to the data presented above, the maximum pH level measured in the shallow aquifer at the Air Liquide site was 12.5 during the Gould RI (Dames & Moore 1987b).

Current Plume Data

No recent data are available.

Preferential Pathways

No information was available in the DEQ file to indicate that preferential pathways have been assessed at the site.

Downgradient Plume Monitoring Points (min/max detections)

No data are available.

Visual Seep Sample Data ☐ Yes ☒ No

This site is not located adjacent to the river.

Nearshore Porewater Data

This site is not located adjacent to the river.

Groundwater Plume Temporal Trend

Groundwater plume temporal trend information for the Air Liquide site is not documented.

10.2.4. Summary

Groundwater investigation data collected from the Schnitzer Investment - Doane Lake site is limited and is mostly associated with RI activities conducted at the Gould Electronics site. Available records indicate that lead and arsenic groundwater data were collected from the Air Liquide site in 1987 and 1994. Although more recent data collected from the Gould site indicates decreasing concentrations of metals after Gould site remedial actions, no records were available indicating recent water quality conditions at the Air Liquide site. The DEQ has indicated that additional investigation is necessary in the compressor oil cleanup area (DEQ 2004).

10.3. Surface Water

10.3.1. Surface Water Investigation ☒ Yes ☐ No

In 1987, surface water samples were collected around the lake. Calcium hydroxide was detected, and many pH values exceeded 10, as reported in DEQ (2004). No additional information was available in the DEQ reference document regarding other analytes tested during the sampling or the resulting concentrations.

10.3.2. General or Individual Stormwater Permit (Current or Past) ☒ Yes ☐ No

Permit Type	File Number	Start Date	Outfalls	Parameters/Frequency
GEN 12Z	107922	07/06/1993	Unknown	Standard[1]
GEN 12H	107922 (expired)	07/06/1993	Inactive industrial permit	Unknown

[1] Standard GEN12Z permit requirements include pH, oil and grease, total suspended solids, copper, lead, zinc, and visual monitoring. Monitored twice yearly.

There is no additional information available for Air Liquide's stormwater drainage system or discharge point in the reports reviewed. Air Liquide connected in 2000 to the City stormwater collection system that discharges to the river at City Outfall 22B (COP 2000). Historically, calcium hydroxide was discharged into East Doane Lake, which was also used for the disposal of battery acid, slag, and other wastes from neighboring facilities.

East Doane Lake reportedly discharged to the Willamette River through a 48-inch drainpipe beneath Front Avenue (Woodward-Clyde 1998); it is uncertain if this discharge refers to the City storm system constructed in 1980 and how drainage from East Doane Lake discharged to the river before the public system was installed.

Do other non-stormwater wastes discharge to the system? ☐ Yes ☒ No

10.3.3. Stormwater Data ☐ Yes ☒ No

10.3.4. Catch Basin Solids Data ☐ Yes ☒ No

10.3.5. Wastewater Permit ☐ Yes ☒ No

10.3.6. Wastewater Data ☐ Yes ☒ No

10.3.7. Summary

The site has an existing GEN 12Z stormwater permit for industrial stormwater discharges. Historically, calcium hydroxide discharged to East Doane Lake may have reached the Willamette River via the East Doane Lake 48-inch outfall or some other pathway.

10.4. Sediment

10.4.1. River Sediment Data ☐ Yes ☐ No

Sediment data were not collected as part of this site's investigations, but data were collected as part of the Gould facility investigations. It is known that the Schnitzer facility discharged process-generated calcium hydroxide wastes into East Doane Lake until 1981 and that surface water from this location discharged to the Willamette River. The following summary related to sediment sampling in the vicinity of the East Doane Lake outfall is taken from the Gould Electronic, Inc./NL Industries (ECSI #49) CSM Site Summary.

Sediment samples were collected from the Willamette River upstream and downstream of the East Doane Lake outfall during the Gould RI/FS (Dames & Moore 1987b). These samples generally had low metals concentrations (Dames & Moore 1987b); total lead ranged from 26 to 56 mg/kg, total arsenic ranged from 5.7 to 6.2 mg/kg, total chromium ranged from 9 to 26 mg/kg, and total zinc ranged from 72 to 82 mg/kg. Hexavalent chromium and cadmium concentrations were near or below detection limits (Dames & Moore 1987b).

More recent samples collected in the approximate vicinity of the former East Doane Lake outfall include those from the following surveys (Figure 1):

Survey	Survey Code	Year
City of Portland Outfall Project (CH2M Hill 2000)	WLCOFH02	2004
Gasco RI, Phase I (Hahn & Associates 1998)	WLCGSA96	1998
Portland Harbor Sediment Investigation (Weston 1998)	WR-WSI98	1998
Rhone-Poulenc 1st Quarter 1995 (Woodward-Clyde 1995)	WLCRPB95	1995
McCormick & Baxter RI, Phase I (PTI 1992)	MBCREOS1	1992

These samples include eight surface samples, plus one subsurface sample collected at SD-12. The results of these nine samples are summarized in Table 2.

10.4.2. Summary

See Final CSM Update.

11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES

11.1. Soil Cleanup/Source Control

Waste compressor oil was spilled inside a building and migrated onto soils just beyond the building. Air Liquide cleaned up the majority of the compressor oil released, although a small area of contaminated soil remains beneath the building. In 1993, Air Liquide removed a 1,500-gallon acetone UST. Low levels of acetone and MEK were detected in soil and groundwater in the vicinity.

11.2. Groundwater Cleanup/Source Control

No groundwater source controls have been implemented at the site.

11.3. Other

11.4. Potential for Recontamination from Upland Sources

See Final CSM Update.

12. BIBLIOGRAPHY / INFORMATION SOURCES

References cited:

CH2M Hill. 2000. Preliminary Evaluation of City Outfalls, Portland Harbor Study Area. Notebook 2, Westshore Stormwater and CSO Outfalls. Prepared for City of Portland Bureau of Environmental Services, Portland, OR. CH2M Hill, Portland, OR.

COP. 2000. Bureau of Buildings, Plumbing Permit, Permit 00-180620-PT. October 11, 2000. Accessed May 4, 2005. City of Portland, OR.

COP. 2005. City of Portland file review performed by Dawn Sanders, May 2005. City of Portland, Portland, OR.

DEQ. 2004. DEQ Site Summary Report – Details for Site ID 395. DEQ Environmental Cleanup Site (ECSI) Database. Accessed June 16, 2004. www.deq.state.or.us/wmc/ecsi/ecsidetail.asp?seqnbr=395.

Dames & Moore. 1987a. Hydrogeological Data Report Interim Evaluation, NL/Gould RI/FS, Portland, Oregon. Prepared for NL Industries, Inc. and Gould Inc. Dames & Moore, Portland, OR. (February 27, 1987).

Dames and Moore. 1987b. Remedial Investigation, Gould Site, Portland, Oregon. Final report. Prepared for NL Industries, Inc. and Gould Inc. Dames & Moore, Portland, OR. (November 16, 1987).

Hahn & Associates. 1998. Gasco Phase I Remedial Investigation Summary Report. Prepared for Gasco. Hahn & Associates, Portland, OR.

Integral, Windward, Kennedy/Jenks, Anchor Environmental, and Groundwater Solutions. 2004. Portland Harbor RI/FS Programmatic Work Plan. Prepared for the Lower Willamette Group, Portland, OR. Integral Consulting, Inc., Mercer Island, WA.

MRP Services. 2004. Site Data for Project: AMEC Environmental. TV Survey logs dated 6/22/2004.

PTI. 1992. McCormick & Baxter Remedial Investigation, Phase I. Prepared for McCormick & Baxter. PTI Environmental Services, Bellevue, WA.

Weston. 1998. Portland Harbor Sediment Investigation Report, Multnomah County, OR. Report No. 04000-019-036-AACE. Prepared for the U.S. Environmental Protection Agency and Oregon Department of Environmental Quality, Portland, OR. Roy F. Weston, Inc., Seattle, WA.

Woodward-Clyde. 1995. 1st Quarter 1995: Surface Water and Sediment. Prepared for Rhone-Poulenc AG Company. Woodward-Clyde International, Portland, OR.

Woodward-Clyde. 1998. NPDES Permit Modification, Rhone-Poulenc AG Company, File No. 74995, Permit No. 101180, EPA No. OR-000174-1. Woodward-Clyde International, Portland, OR.

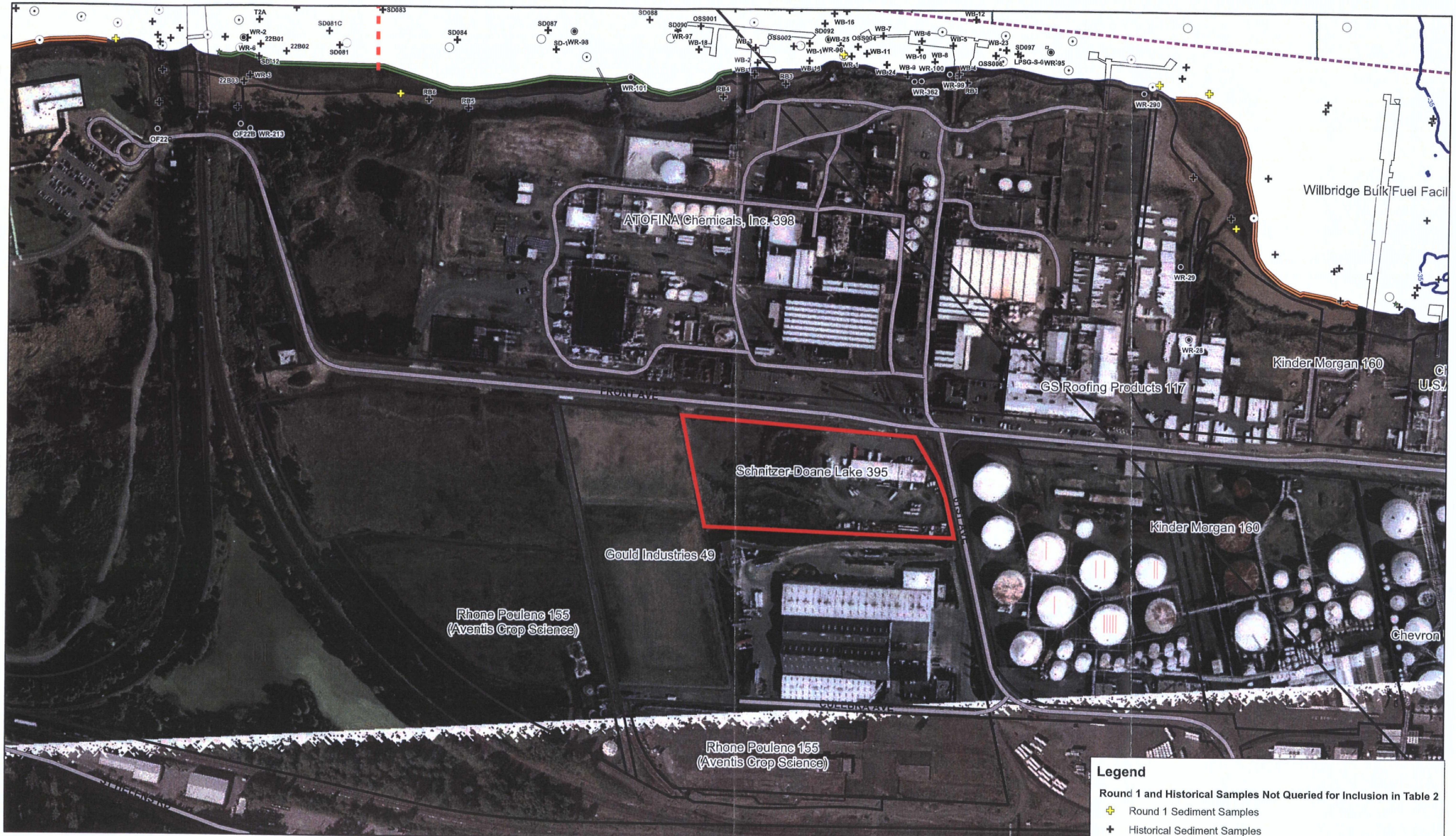
Figures:

Tables:

Supplemental Figures:

FIGURES

Figure 1: Site Features



integral consulting inc.

LWG Lower Willamette Group

Map Document: (C:\GIS\Projects\Portland_Harbor\LWG-Map-Projects\Conseptual_Site_Model\Sample_Locations.mxd)
Plot Date: 11/16/2004

Areal Photo Date: October 2001.
Base Map features from Portland Metro's RLIS.

Outfall information contained on this map is accurate according to available records; however, the City of Portland makes no warranty, xpressed or implied, as to the completeness or accuracy of the information published (updated March 2005).

Outfalls
Seep Photo Location (Not location of actual Seep)
River Miles

Navigation Channel
-35ft. Contour (NAVD 88)
Docks & In-water Structures
Selected ECSI Site Property Boundary

Human Use Areas
Dockside Worker
Recreational Beach Use
Transient

LWG Round 2 Proposed Sediment Samples
Surface Sample Only
Core & Surface Sample

0 100 200 400 Feet

DRAFT

DO NOT QUOTE OR CITE. This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Figure 1
Portland Harbor RI/FS
Conceptual Site Model
Schnitzer-Doane Lake
(Air Liquide)
ECSI 395

TABLES

Schnitzer -Doane Lake (Air Liquide American Corporation #395)

Table 1. Potential Sources and Transport Pathways Assessment

Potential Sources	Media Impacted					COIs																	Potential Complete Pathway				
						TPH			VOCs																		
Description of Potential Source	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	River Sediment	Gasoline-Range	Diesel - Range	Heavier - Range	Petroleum-Related (e.g. BTEX)	VOCs	Chlorinated VOCs	SVOCs	PAHs	Phthalates	Phenolics	Metals (Lead)	PCBs	Herbicides and Pesticides	Dioxins/Furans	Butyltins	Calcium Hydroxide waste	Acetone and MEK	Overland Transport	Groundwater	Direct Discharge - Overwater	Direct Discharge - Storm/Wastewater	Riverbank Erosion
Upland Areas																											
Discharge of calcium hydroxide waste in to Doane Lake	✓	✓	✓																		✓			?		✓	
1,500-gallon acetone UST		✓	✓								✓											✓					
Unknown source of subsurface contamination		✓									✓						✓										
Compressor oil spill	✓	✓							✓																		
Overwater Areas																											
Other Areas/Other Issues																											
Adjacent NL/Gould Superfund site	✓	✓	✓													✓										?	

Notes:

[1] All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.

TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychorinated biphenols

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Polychlorinated biphenyls (ug/kg)	1	0	0						4.7 U	4.7 U	4.7	4.7 U	4.7 U
surface	Total solids (percent)	2	2	100	26.5	65	45.8	26.5	26.5	26.5	65	45.8	26.5	26.5
surface	Total organic carbon (percent)	8	8	100	0.077	4.51	1.3	0.5	2.01	0.077	4.51	1.3	0.5	2.01
surface	Moisture (percent)	2	2	100	51	220	136	51	51	51	220	136	51	51
surface	pH (pH units)	2	2	100	6.4	7	6.7	6.4	6.4	6.4	7	6.7	6.4	6.4
surface	Specific Gravity (Std. Units)	2	2	100	2.49	2.71	2.6	2.49	2.49	2.49	2.71	2.6	2.49	2.49
surface	2,3,7,8-Tetrachlorodibenzo-p-dioxin (pg/g)	2	1	50	3.4	3.4	3.4	3.4	3.4	0.41 U	3.4	1.91	0.41 U	0.41 U
surface	Tetrachlorodibenzo-p-dioxin (pg/g)	2	2	100	11	14	12.5	11	11	11	14	12.5	11	11
surface	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (pg/g)	2	0	0						0.63 U	1.9 U	1.27	0.63 U	0.63 U
surface	Pentachlorodibenzo-p-dioxin (pg/g)	2	0	0						1.3 U	3.6 U	2.45	1.3 U	1.3 U
surface	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (pg/g)	2	0	0						0.58 U	4 U	2.29	0.58 U	0.58 U
surface	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (pg/g)	2	1	50	15	15	15	15	15	2.1 U	15	8.55	2.1 U	2.1 U
surface	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (pg/g)	2	1	50	9.4	9.4	9.4	9.4	9.4	1.1 U	9.4	5.25	1.1 U	1.1 U
surface	Hexachlorodibenzo-p-dioxin (pg/g)	2	2	100	5.2	85	45.1	5.2	5.2	5.2	85	45.1	5.2	5.2
surface	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (pg/g)	2	2	100	34	380	207	34	34	34	380	207	34	34
surface	Heptachlorodibenzo-p-dioxin (pg/g)	2	2	100	88	740	414	88	88	88	740	414	88	88
surface	Octachlorodibenzo-p-dioxin (pg/g)	2	2	100	330	3600	1970	330	330	330	3600	1970	330	330
surface	2,3,7,8-Tetrachlorodibenzofuran (pg/g)	2	2	100	8.5	19	13.8	8.5	8.5	8.5	19	13.8	8.5	8.5
surface	Tetrachlorodibenzofuran (pg/g)	2	2	100	70	91	80.5	70	70	70	91	80.5	70	70
surface	1,2,3,7,8-Pentachlorodibenzofuran (pg/g)	2	2	100	5	86	45.5	5	5	5	86	45.5	5	5
surface	2,3,4,7,8-Pentachlorodibenzofuran (pg/g)	2	1	50	22	22	22	22	22	3.8 U	22	12.9	3.8 U	3.8 U
surface	Pentachlorodibenzofuran (pg/g)	2	2	100	61	180	121	61	61	61	180	121	61	61
surface	1,2,3,4,7,8-Hexachlorodibenzofuran (pg/g)	2	2	100	11	140	75.5	11	11	11	140	75.5	11	11
surface	1,2,3,6,7,8-Hexachlorodibenzofuran (pg/g)	2	1	50	65	65	65	65	65	9.6 U	65	37.3	9.6 U	9.6 U
surface	1,2,3,7,8,9-Hexachlorodibenzofuran (pg/g)	2	0	0						0.41 U	3.5 U	1.96	0.41 U	0.41 U
surface	2,3,4,6,7,8-Hexachlorodibenzofuran (pg/g)	2	1	50	13	13	13	13	13	3.3 U	13	8.15	3.3 U	3.3 U
surface	Hexachlorodibenzofuran (pg/g)	2	2	100	83	260	172	83	83	83	260	172	83	83
surface	1,2,3,4,6,7,8-Heptachlorodibenzofuran (pg/g)	2	1	50	90	90	90	90	90	76 U	90	83	76 U	76 U
surface	1,2,3,4,7,8,9-Heptachlorodibenzofuran (pg/g)	2	2	100	6	33	19.5	6	6	6	33	19.5	6	6
surface	Heptachlorodibenzofuran (pg/g)	2	2	100	150	160	155	150	150	150	160	155	150	150
surface	Octachlorodibenzofuran (pg/g)	2	2	100	120	330	225	120	120	120	330	225	120	120
surface	Gravel (percent)	2	2	100	1.28	4.4	2.84	1.28	1.28	1.28	4.4	2.84	1.28	1.28
surface	Sand (percent)	2	2	100	56.21	79	67.6	56.21	56.21	56.21	79	67.6	56.2	56.21
surface	Fines (percent)	2	2	100	16.5	42.51	29.5	16.5	16.5	16.5	42.51	29.5	16.5	16.5
surface	Silt (percent)	2	2	100	13	39.13	26.1	13	13	13	39.13	26.1	13	13
surface	Clay (percent)	2	2	100	3.38	3.5	3.44	3.38	3.38	3.38	3.5	3.44	3.38	3.38
surface	Dalapon (ug/kg)	6	0	0						1.87 U	1000 U	256	2.41 U	500 U
surface	Dicamba (ug/kg)	6	0	0						1.91 U	100 U	26.5	2.47 U	50 U
surface	MCPA (ug/kg)	6	0	0						3.66 U	50000 U	12500	4.71 U	25000 U
surface	Dichloroprop (ug/kg)	6	0	0						3.08 U	250 U	65	3.97 U	120 U
surface	2,4-D (ug/kg)	6	1	16.7	21	21	21	21	21	3.24 U	250 U	67	4.18 U	120 U
surface	Silvex (ug/kg)	6	0	0						2.8 U	50 U	14.7	3.19 U	25 U
surface	2,4,5-T (ug/kg)	6	0	0						2.8 U	50 U	15.1	3.91 U	25 U
surface	2,4-DB (ug/kg)	6	2	33.3	18.7	23	20.9	18.7	18.7	2.34 U	1000 U	258	18.7	500 U
surface	Dinoseb (ug/kg)	6	0	0						2.68 U	250 U	63.8	3.45 U	120 U
surface	MCPP (ug/kg)	6	0	0						1.63 U	50000 U	12500	2.1 U	25000 U
surface	Aluminum (mg/kg)	5	5	100	5700	25500	17000	21000	23600	5700	25500	17000	21000	23600
surface	Antimony (mg/kg)	4	4	100	0.623 J	32.1	11.2	4.47 J	7.5 J	0.623 J	32.1	11.2	4.47 J	7.5 J
surface	Arsenic (mg/kg)	7	6	85.7	3.3 J	47.5	15.5	5.8 J	22.9	3.3 J	47.5	14.4	8 U	22.9
surface	Cadmium (mg/kg)	7	3	42.9	0.097	1.7	0.859	0.78	0.78	0.00189 U	1.7	0.496	0.3 U	0.78
surface	Chromium (mg/kg)	7	7	100	11.9 J	199	52.9	24.9	74	11.9 J	199	52.9	24.9	74
surface	Copper (mg/kg)	5	5	100	17.2 B	271 B	92.7	34	116 B	17.2 B	271 B	92.7	34	116 B

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Lead (mg/kg)	8	8	100	10	266 B	79.6	25	197 B	10	266 B	79.6	25	197 B
surface	Manganese (mg/kg)	2	2	100	487	560	524	487	487	487	560	524	487	487
surface	Mercury (mg/kg)	7	6	85.7	0.0207 J	0.625	0.217	0.1	0.36	0.0207 J	0.625	0.201	0.1 U	0.36
surface	Nickel (mg/kg)	5	5	100	16.6 B	138 B	61.1	25	101 B	16.6 B	138 B	61.1	25	101 B
surface	Selenium (mg/kg)	5	2	40	9.42	11	10.2	9.42	9.42	0.102 U	11	4.32	0.712 U	9.42
surface	Silver (mg/kg)	5	4	80	0.136	4.24	1.58	0.932	1	0.136	4.24	1.42	0.932	1
surface	Thallium (mg/kg)	2	1	50	1.2	1.2	1.2	1.2	1.2	1.2	8 U	4.6	1.2	1.2
surface	Zinc (mg/kg)	7	7	100	60.3	689 B	313	190	666 B	60.3	689 B	313	190	666 B
surface	Barium (mg/kg)	2	2	100	149	180	165	149	149	149	180	165	149	149
surface	Beryllium (mg/kg)	2	2	100	0.5	0.79	0.645	0.5	0.5	0.5	0.79	0.645	0.5	0.5
surface	Calcium (mg/kg)	2	2	100	6600	7010 J	6810	6600	6600	6600	7010 J	6810	6600	6600
surface	Chromium hexavalent (mg/kg)	1	1	100	0.17 G	0.17 G	0.17	0.17 G	0.17 G	0.17 G	0.17 G	0.17	0.17 G	0.17 G
surface	Cobalt (mg/kg)	2	2	100	15.4	27	21.2	15.4	15.4	15.4	27	21.2	15.4	15.4
surface	Iron (mg/kg)	2	2	100	40000	41400	40700	40000	40000	40000	41400	40700	40000	40000
surface	Magnesium (mg/kg)	2	2	100	5300	5400	5350	5300	5300	5300	5400	5350	5300	5300
surface	Potassium (mg/kg)	2	2	100	670	930	800	670	670	670	930	800	670	670
surface	Sodium (mg/kg)	2	2	100	530	917	724	530	530	530	917	724	530	530
surface	Vanadium (mg/kg)	2	2	100	89.1	95	92.1	89.1	89.1	89.1	95	92.1	89.1	89.1
surface	2-Methylnaphthalene (ug/kg)	7	5	71.4	4.14	280	68.3	24	24.8	4.14	330 U	143	24.8	330 U
surface	Acenaphthene (ug/kg)	8	5	62.5	6.18	370 J	90.3	17.3	46	6.18	370 J	145	46	330 U
surface	Acenaphthylene (ug/kg)	8	4	50	10.8	250 J	105	17.4	143	10.8	330 U	144	50 U	330 U
surface	Anthracene (ug/kg)	8	5	62.5	13.8	310 J	97.4	60	85.4	13.8	330 U	150	60	330 U
surface	Fluorene (ug/kg)	8	5	62.5	5.74	290 J	72.1	22.6	34	5.74	330 U	134	34	330 U
surface	Naphthalene (ug/kg)	8	5	62.5	10.4	410 J	110	55	60.1	10.4	410 J	157	55	330 U
surface	Phenanthrene (ug/kg)	8	6	75	18.1	930 J	224	60	230	18.1	930 J	250	68	330 U
surface	Low Molecular Weight PAH (ug/kg)	8	6	75	60 A	2560 A	602	94.68 A	425 A	60 A	2560 A	534	330 UA	425 A
surface	Dibenz(a,h)anthracene (ug/kg)	8	5	62.5	21.3	150	73.2	74	91.3	21.3	330 U	135	74	330 U
surface	Benz(a)anthracene (ug/kg)	8	5	62.5	59.2	650 J	240	189	240	50 U	650 J	239	189	330 U
surface	Benzo(a)pyrene (ug/kg)	8	6	75	55	790	292	78.4	404	55	790	302	330 U	404
surface	Benzo(b)fluoranthene (ug/kg)	4	2	50	67	300	184	67	67	67	330 U	257	300	330 U
surface	Benzo(g,h,i)perylene (ug/kg)	8	6	75	61.8	470	219	110	400	61.8	470	247	200	400
surface	Benzo(k)fluoranthene (ug/kg)	4	1	25	310	310	310	310	310	50 U	330 U	255	310	330 U
surface	Chrysene (ug/kg)	8	6	75	53	860 J	294	94.3	340	53	860 J	303	330 U	340
surface	Fluoranthene (ug/kg)	8	6	75	92.7	1300 J	372	130	440	92.7	1300 J	362	176	440
surface	Indeno(1,2,3-cd)pyrene (ug/kg)	8	6	75	46.4	340	155	55	248	46.4	340	199	190	330 U
surface	Pyrene (ug/kg)	8	6	75	113	1400 J	462	190	580	113	1400 J	429	330 U	580
surface	Benzo(b+k)fluoranthene (ug/kg)	8	6	75	67 A	910	376	116	610 A	67 A	910	364	330 UA	610 A
surface	High Molecular Weight PAH (ug/kg)	8	6	75	657.9 A	6800 A	2420	710.7 A	3034 A	330 UA	6800 A	1900	660 A	3034 A
surface	Polycyclic Aromatic Hydrocarbons (ug/kg)	8	6	75	720 A	9360 A	3020	786.02 A	3459 A	330 UA	9360 A	2350	753 A	3459 A
surface	Anthanthrene (ug/kg)	1	0	0						79 U	79 U	79	79 U	79 U
surface	Benzo(e)pyrene (ug/kg)	1	1	100	530	530	530	530	530	530	530	530	530	530
surface	7,12-Dimethylbenz(a)anthracene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	1-Chloronaphthalene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	2-Naphthylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	2,4'-Dichlorobiphenyl (ug/kg)	3	2	66.7	1.21 P	3.69 P	2.45	1.21 P	1.21 P	0.45 U	3.69 P	1.78	1.21 P	1.21 P
surface	2,2',5-Trichlorobiphenyl (ug/kg)	3	1	33.3	0.61 JP	0.61 JP	0.61	0.61 JP	0.61 JP	0.32 U	0.61 JP	0.457	0.44 U	0.44 U
surface	2,4,4'-Trichlorobiphenyl (ug/kg)	3	2	66.7	0.22 JP	2.65 P	1.44	0.22 JP	0.22 JP	0.22 JP	2.65 P	1.05	0.28 U	0.28 U
surface	2,2',3,5'-Tetrachlorobiphenyl (ug/kg)	3	2	66.7	0.44 P	1.56 P	1	0.44 P	0.44 P	0.25 U	1.56 P	0.75	0.44 P	0.44 P
surface	2,2',5,5'-Tetrachlorobiphenyl (ug/kg)	3	2	66.7	0.41 JP	6.11	3.26	0.41 JP	0.41 JP	0.4 U	6.11	2.31	0.41 JP	0.41 JP
surface	2,3',4,4'-Tetrachlorobiphenyl (ug/kg)	3	3	100	0.72 P	2.88	1.62	1.27 P	1.27 P	0.72 P	2.88	1.62	1.27 P	1.27 P
surface	2,2',4,5,5'-Pentachlorobiphenyl (ug/kg)	3	3	100	0.76	1.12	0.953	0.98	0.98	0.76	1.12	0.953	0.98	0.98
surface	2,3,3',4,4'-Pentachlorobiphenyl (ug/kg)	3	0	0						0.14 U	0.25 U	0.197	0.2 U	0.2 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	2,3',4,4',5-Pentachlorobiphenyl (ug/kg)	3	0	0						0.17 U	0.3 U	0.237	0.24 U	0.24 U
surface	2,2',3,3',4,4'-Hexachlorobiphenyl (ug/kg)	3	2	66.7	0.34 JP	0.53 JP	0.435	0.34 JP	0.34 JP	0.15 U	0.53 JP	0.34	0.34 JP	0.34 JP
surface	2,2',3,4,4',5'-Hexachlorobiphenyl (ug/kg)	3	3	100	0.99 JP	3.2	1.87	1.42 P	1.42 P	0.99 JP	3.2	1.87	1.42 P	1.42 P
surface	2,2',4,4',5,5'-Hexachlorobiphenyl (ug/kg)	3	3	100	2.24	5.41	3.48	2.8	2.8	2.24	5.41	3.48	2.8	2.8
surface	2,2',3,3',4,4',5-Heptachlorobiphenyl (ug/kg)	3	2	66.7	0.68 P	2.31 P	1.5	0.68 P	0.68 P	0.28 U	2.31 P	1.09	0.68 P	0.68 P
surface	2,2',3,4,4',5,5'-Heptachlorobiphenyl (ug/kg)	3	3	100	0.69 J	5.71	2.62	1.45	1.45	0.69 J	5.71	2.62	1.45	1.45
surface	2,2',3,4',5,5',6-Heptachlorobiphenyl (ug/kg)	3	2	66.7	0.58	4.36	2.47	0.58	0.58	0.31 U	4.36	1.75	0.58	0.58
surface	2,4'-DDD (ug/kg)	3	3	100	115	154	129	117	117	115	154	129	117	117
surface	2,4'-DDE (ug/kg)	3	3	100	15.3	22.6	18.6	17.8	17.8	15.3	22.6	18.6	17.8	17.8
surface	2,4'-DDT (ug/kg)	3	3	100	11.5	39.6	28.2	33.5	33.5	11.5	39.6	28.2	33.5	33.5
surface	4,4'-DDD (ug/kg)	7	6	85.7	8.2	315	183	195	250	0.54 U	315	157	195	250
surface	4,4'-DDE (ug/kg)	7	4	57.1	10	67.9	37.4	19.5	52.2	0.54 U	95 U	37.3	19.5	67.9
surface	4,4'-DDT (ug/kg)	7	6	85.7	54.6	990	393	75.4	900 J	16 U	990	339	75.4	900 J
surface	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	7	7	100	8.2 A	1230 A	515	380 A	900 A	8.2 A	1230 A	515	380 A	900 A
surface	Aldrin (ug/kg)	7	0	0						0.54 U	48 U	9.79	1.61 U	8 U
surface	alpha-Hexachlorocyclohexane (ug/kg)	7	1	14.3	1.52 J	1.52 J	1.52	1.52 J	1.52 J	0.54 U	48 U	9.71	1.52 J	8 U
surface	beta-Hexachlorocyclohexane (ug/kg)	7	0	0						0.54 U	48 U	9.78	1.58 U	8 U
surface	delta-Hexachlorocyclohexane (ug/kg)	7	1	14.3	5.33	5.33	5.33	5.33	5.33	0.54 U	48 U	10.3	5.33	8 U
surface	gamma-Hexachlorocyclohexane (ug/kg)	7	0	0						0.54 U	48 U	9.72	1.43 U	8 U
surface	cis-Chlordane (ug/kg)	5	1	20	16.4	16.4	16.4	16.4	16.4	0.47 U	48 U	13.5	1.49 U	16.4
surface	trans-Chlordane (ug/kg)	3	3	100	2.13 J	8.87	6.52	8.55	8.55	2.13 J	8.87	6.52	8.55	8.55
surface	Oxychlordane (ug/kg)	3	1	33.3	10.7	10.7	10.7	10.7	10.7	2.5 U	10.7	5.65	3.74 U	3.74 U
surface	cis-Nonachlor (ug/kg)	3	1	33.3	21.1	21.1	21.1	21.1	21.1	2.5 U	21.1	9.11	3.74 U	3.74 U
surface	trans-Nonachlor (ug/kg)	3	0	0						2.5 U	3.74 U	3.07	2.96 U	2.96 U
surface	Dieldrin (ug/kg)	7	1	14.3	2.78 J	2.78 J	2.78	2.78 J	2.78 J	0.54 U	95 U	18.9	2.78 J	16 U
surface	alpha-Endosulfan (ug/kg)	7	0	0						0.54 U	48 U	9.78	1.59 U	8 U
surface	beta-Endosulfan (ug/kg)	7	0	0						0.54 U	95 U	18.7	1.45 U	16 U
surface	Endosulfan sulfate (ug/kg)	7	0	0						0.54 U	95 U	18.7	1.36 U	16 U
surface	Endrin (ug/kg)	7	0	0						0.54 U	95 U	18.7	1.35 U	16 U
surface	Endrin aldehyde (ug/kg)	7	0	0						0.95 U	95 U	15.7	1.53 U	5 U
surface	Endrin ketone (ug/kg)	7	0	0						0.47 U	95 U	18.6	1.05 U	16 U
surface	Heptachlor (ug/kg)	7	0	0						0.54 U	48 U	9.67	1.29 U	8 U
surface	Heptachlor epoxide (ug/kg)	7	2	28.6	8.9	14	11.5	8.9	8.9	0.54 U	48 U	12.6	8 U	14
surface	Methoxychlor (ug/kg)	7	1	14.3	17.3 J	17.3 J	17.3	17.3 J	17.3 J	0.95 U	480 U	95.3	17.3 J	80 U
surface	Toxaphene (ug/kg)	7	0	0						15.7 U	4800 U	743	25 U	160 U
surface	Azinphosmethyl (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Bromoxynil (ug/kg)	2	0	0						120 U	250 U	185	120 U	120 U
surface	gamma-Chlordane (ug/kg)	2	0	0						0.47 U	48 U	24.2	0.47 U	0.47 U
surface	Chlordane (cis & trans) (ug/kg)	5	0	0						3.52 U	80 U	34.6	5.27 U	80 U
surface	Chlorpyrifos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Coumaphos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Demeton (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Diazinon (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Dichlorvos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Disulfoton (ug/kg)	2	1	50	56	56	56	56	56	50 U	56	53	50 U	50 U
surface	Ethoprop (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Fensulfothion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Fenthion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Malathion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Merphos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Methyl parathion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Mevinphos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Naled (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Perthane (ug/kg)	2	0	0						100 U	100 U	100	100 U	100 U
surface	Phorate (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Prothiophos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Ronnel (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Stirofos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Sulprofos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Tetraethyl pyrophosphate (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Trichloronate (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Diesel fuels (mg/kg)	4	3	75	27.2	159	88	77.9	77.9	27.2	159	78.5	50 U	77.9
surface	Lube Oil (mg/kg)	4	3	75	297	482	379	357	357	100 U	482	309	297	357
surface	Natural gasoline (mg/kg)	1	0	0						20 U	20 U	20	20 U	20 U
surface	2,3,4,6-Tetrachlorophenol (ug/kg)	6	0	0						16.9 U	1600 U	557	24.3 U	1600 U
surface	2,4,5-Trichlorophenol (ug/kg)	7	0	0						16.9 U	330 U	139	96 U	330 U
surface	2,4,6-Trichlorophenol (ug/kg)	7	0	0						16.9 U	120 U	58.1	51 U	96 U
surface	2,4-Dichlorophenol (ug/kg)	7	0	0						16.9 U	160 U	52.5	26 U	64 U
surface	2,4-Dimethylphenol (ug/kg)	7	0	0						16.9 U	64 U	28.8	24.3 U	32 U
surface	2,4-Dinitrophenol (ug/kg)	7	0	0						26 U	190 UJ	106	96.1 U	160 UJ
surface	2-Chlorophenol (ug/kg)	7	0	0						16.9 U	79 U	35.5	24.3 U	64 U
surface	2-Methylphenol (ug/kg)	5	0	0						16.9 U	320 U	79.9	19.2 U	24.3 U
surface	2-Nitrophenol (ug/kg)	7	0	0						16.9 U	96 U	46.5	26 U	79 U
surface	4,6-Dinitro-2-methylphenol (ug/kg)	7	0	0						51 U	320 U	140	120 U	190 U
surface	4-Chloro-3-methylphenol (ug/kg)	7	0	0						16.9 U	160 U	49.8	26 U	64 U
surface	4-Methylphenol (ug/kg)	5	2	40	48	570	309	48	48	33.7 U	570	148	48	48.5 U
surface	4-Nitrophenol (ug/kg)	10	0	0						1.86 U	240 U	81.5	84.3 U	121 U
surface	Pentachlorophenol (ug/kg)	10	1	10	9.66 J	9.66 J	9.66	9.66 J	9.66 J	2.39 U	160 UJ	50.4	19.2 U	120 U
surface	Phenol (ug/kg)	7	0	0						16.9 U	160 U	47.1	24.3 U	64 U
surface	2,3,4,5-Tetrachlorophenol (ug/kg)	1	0	0						79 UJ	79 UJ	79	79 UJ	79 UJ
surface	2,3,5,6-Tetrachlorophenol (ug/kg)	3	0	0						16.9 U	24.3 U	20.1	19.2 U	19.2 U
surface	2,4-Dichloro-6-methylphenol (ug/kg)	2	0	0						230 U	570 U	400	230 U	230 U
surface	2,6-Dichlorophenol (ug/kg)	3	0	0						150 U	370 U	227	160 U	160 U
surface	4-Chloro-o-cresol (ug/kg)	2	0	0						92 U	230 U	161	92 U	92 U
surface	4-Chlorophenol (ug/kg)	2	0	0						370 U	910 U	640	370 U	370 U
surface	Cresol (ug/kg)	2	0	0						46 U	110 U	78	46 U	46 U
surface	Dimethyl phthalate (ug/kg)	7	0	0						16 UJ	330 U	108	19.2 U	330 U
surface	Diethyl phthalate (ug/kg)	7	0	0						16 UJ	330 U	108	19.2 U	330 U
surface	Dibutyl phthalate (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Butylbenzyl phthalate (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Di-n-octyl phthalate (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Bis(2-ethylhexyl) phthalate (ug/kg)	7	3	42.9	210	250	237	250	250	16.9 UJ	330 U	202	250	330 U
surface	1,2-Diphenylhydrazine (ug/kg)	2	0	0						1600 U	1600 U	1600	1600 U	1600 U
surface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	3	0	0						19 U	330 U	226	330 U	330 U
surface	2,4-Dinitrotoluene (ug/kg)	7	0	0						16.9 U	330 U	139	96 U	330 U
surface	2,6-Dinitrotoluene (ug/kg)	7	0	0						16.9 U	330 U	128	79 U	330 U
surface	2-Chloronaphthalene (ug/kg)	7	0	0						1.69 U	330 U	100	16 UJ	330 U
surface	2-Nitroaniline (ug/kg)	7	0	0						16.9 U	1600 U	708	96 U	1600 U
surface	3,3'-Dichlorobenzidine (ug/kg)	7	0	0						16.9 U	660 U	257	96 U	660 U
surface	3-Nitroaniline (ug/kg)	7	0	0						16.9 U	1600 U	710	110 U	1600 U
surface	4-Bromophenyl phenyl ether (ug/kg)	7	0	0						16.9 U	330 U	117	24.3 U	330 U
surface	4-Chloroaniline (ug/kg)	7	0	0						16.9 U	330 U	157	57 U	330 U
surface	4-Chlorophenyl phenyl ether (ug/kg)	7	0	0						16.9 U	330 U	110	24.3 U	330 U
surface	4-Nitroaniline (ug/kg)	7	0	0						16.9 U	1600 U	708	96 U	1600 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Aniline (ug/kg)	5	0	0						16.9 U	330 U	144	24.3 U	330 U
surface	Benzoic acid (ug/kg)	7	0	0						84.3 U	790 U	277	190 U	330 U
surface	Benzyl alcohol (ug/kg)	7	0	0						16.9 U	330 U	128	24.3 U	330 U
surface	Bis(2-chloroethoxy) methane (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Bis(2-chloroethyl) ether (ug/kg)	7	0	0						16.9 U	330 U	113	32 U	330 U
surface	Carbazole (ug/kg)	5	2	40	40 J	59	49.5	40 J	40 J	16.9 U	59	31.9	24.3 U	40 J
surface	Dibenzofuran (ug/kg)	7	2	28.6	20	170 J	95	20	20	16.9 U	330 U	130	24.3 U	330 U
surface	Hexachlorobenzene (ug/kg)	8	2	25	2.59 J	5.94	4.27	2.59 J	2.59 J	1.25 U	32 UJ	15.1	16.9 U	24.3 U
surface	Hexachlorobutadiene (ug/kg)	10	0	0						1.25 U	330 U	82.3	19 U	330 U
surface	Hexachlorocyclopentadiene (ug/kg)	6	0	0						16.9 U	330 U	136	24.3 U	330 U
surface	Hexachloroethane (ug/kg)	10	1	10	2.53 J	2.53 J	2.53	2.53 J	2.53 J	1.25 U	330 U	90.5	19 U	330 U
surface	Isophorone (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Nitrobenzene (ug/kg)	7	0	0						16.9 U	330 U	117	24.3 U	330 U
surface	N-Nitrosodimethylamine (ug/kg)	5	0	0						84.3 U	330 U	192	121 U	330 U
surface	N-Nitrosodipropylamine (ug/kg)	7	0	0						16.9 U	330 U	131	38 U	330 U
surface	N-Nitrosodiphenylamine (ug/kg)	7	0	0						16.9 U	330 U	110	24.3 U	330 U
surface	1-Naphthylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	2-Methylpyridine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	3-Methylcholanthrene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	4-Aminobiphenyl (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Acetophenone (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	alpha,alpha-Dimethylphenethylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Benzidine (ug/kg)	2	0	0						1600 U	1600 U	1600	1600 U	1600 U
surface	Bis(2-chloroisopropyl) ether (ug/kg)	4	0	0						16.9 U	320 UJ	95.1	19.2 U	24.3 U
surface	Diphenylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Ethyl methanesulfonate (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Methyl methanesulfonate (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	N-Nitrosodibutylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	N-Nitrosopiperidine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	p-Dimethylaminoazobenzene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Pentachloronitrobenzene (ug/kg)	2	0	0						1600 U	1600 U	1600	1600 U	1600 U
surface	Phenacetin (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Pronamide (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	1,1,1-Trichloroethane (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	1,1,2,2-Tetrachloroethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,1,2-Trichloroethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,1-Dichloroethane (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Vinylidene chloride (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	1,2-Dichloroethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,2-Dichloropropane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	2-Chloroethyl vinyl ether (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Benzene (ug/kg)	3	1	33.3	1.4	1.4	1.4	1.4	1.4	1 U	300 U	101	1.4	1.4
surface	Bromodichloromethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	Bromoform (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Bromomethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Carbon tetrachloride (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Chlorodibromomethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	Chloroethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Chloroform (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Chloromethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	cis-1,3-Dichloropropene (ug/kg)	2	0	0						4 U	4 U	4	4 U	4 U
surface	Dichlorodifluoromethane (ug/kg)	2	0	0						20 U	20 U	20	20 U	20 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Ethylbenzene (ug/kg)	3	0	0						1 U	300 U	101	1 U	1 U
surface	Methylene chloride (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Tetrachloroethene (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Toluene (ug/kg)	3	0	0						1 U	300 U	101	1 U	1 U
surface	trans-1,3-Dichloropropene (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	Trichloroethene (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Trichlorofluoromethane (ug/kg)	2	0	0						20 U	20 U	20	20 U	20 U
surface	Vinyl chloride (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,1,2-Trichloro-1,2,2-trifluoroethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Ethylene dibromide (ug/kg)	2	0	0						4 U	4 U	4	4 U	4 U
surface	1,2-Dichloroethene (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Xylene (ug/kg)	3	0	0						2 U	300 U	101	2 U	2 U
surface	Chlorobenzene (ug/kg)	2	1	50	4.6	4.6	4.6	4.6	4.6	1 U	4.6	2.8	1 U	1 U
surface	1,2-Dichlorobenzene (ug/kg)	7	3	42.9	4.8	1700 J	576	22	22	2 U	1700 J	256	19.2 U	24.3 U
surface	1,3-Dichlorobenzene (ug/kg)	7	0	0						2 U	32 UJ	16.5	19 U	24.3 U
surface	1,4-Dichlorobenzene (ug/kg)	7	2	28.6	4.8	530	267	4.8	4.8	2 U	530	88	19 U	24.3 U
surface	1,2,4-Trichlorobenzene (ug/kg)	7	0	0						16.9 U	330 U	117	24.3 U	330 U
surface	1,2,4,5-Tetrachlorobenzene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Pentachlorobenzene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
subsurface	Lead (mg/kg)	1	1	100	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
subsurface	Acenaphthene (ug/kg)	1	1	100	55	55	55	55	55	55	55	55	55	55
subsurface	Acenaphthylene (ug/kg)	1	1	100	49	49	49	49	49	49	49	49	49	49
subsurface	Anthracene (ug/kg)	1	1	100	130	130	130	130	130	130	130	130	130	130
subsurface	Fluorene (ug/kg)	1	0	0						50 U	50 U	50	50 U	50 U
subsurface	Naphthalene (ug/kg)	1	1	100	58	58	58	58	58	58	58	58	58	58
subsurface	Phenanthrene (ug/kg)	1	1	100	390	390	390	390	390	390	390	390	390	390
subsurface	Low Molecular Weight PAH (ug/kg)	1	1	100	682 A	682 A	682	682 A	682 A	682 A	682 A	682	682 A	682 A
subsurface	Dibenz(a,h)anthracene (ug/kg)	1	1	100	63	63	63	63	63	63	63	63	63	63
subsurface	Benz(a)anthracene (ug/kg)	1	1	100	380	380	380	380	380	380	380	380	380	380
subsurface	Benzo(a)pyrene (ug/kg)	1	1	100	830	830	830	830	830	830	830	830	830	830
subsurface	Benzo(b)fluoranthene (ug/kg)	1	1	100	660	660	660	660	660	660	660	660	660	660
subsurface	Benzo(g,h,i)perylene (ug/kg)	1	1	100	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
subsurface	Benzo(k)fluoranthene (ug/kg)	1	1	100	220	220	220	220	220	220	220	220	220	220
subsurface	Chrysene (ug/kg)	1	1	100	530	530	530	530	530	530	530	530	530	530
subsurface	Fluoranthene (ug/kg)	1	1	100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
subsurface	Indeno(1,2,3-cd)pyrene (ug/kg)	1	1	100	590	590	590	590	590	590	590	590	590	590
subsurface	Pyrene (ug/kg)	1	1	100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
subsurface	Benzo(b+k)fluoranthene (ug/kg)	1	1	100	880 A	880 A	880	880 A	880 A	880 A	880 A	880	880 A	880 A
subsurface	High Molecular Weight PAH (ug/kg)	1	1	100	7673 A	7673 A	7670	7673 A	7673 A	7673 A	7673 A	7670	7670 A	7673 A
subsurface	Polycyclic Aromatic Hydrocarbons (ug/kg)	1	1	100	8355 A	8355 A	8360	8355 A	8355 A	8355 A	8355 A	8360	8360 A	8355 A
subsurface	Diesel fuels (mg/kg)	1	0	0						50 U	50 U	50	50 U	50 U
subsurface	Lube Oil (mg/kg)	1	0	0						100 U	100 U	100	100 U	100 U
subsurface	Natural gasoline (mg/kg)	1	0	0						20 U	20 U	20	20 U	20 U
subsurface	Benzene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Ethylbenzene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Toluene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Xylene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U

SUPPLEMENTAL FIGURES

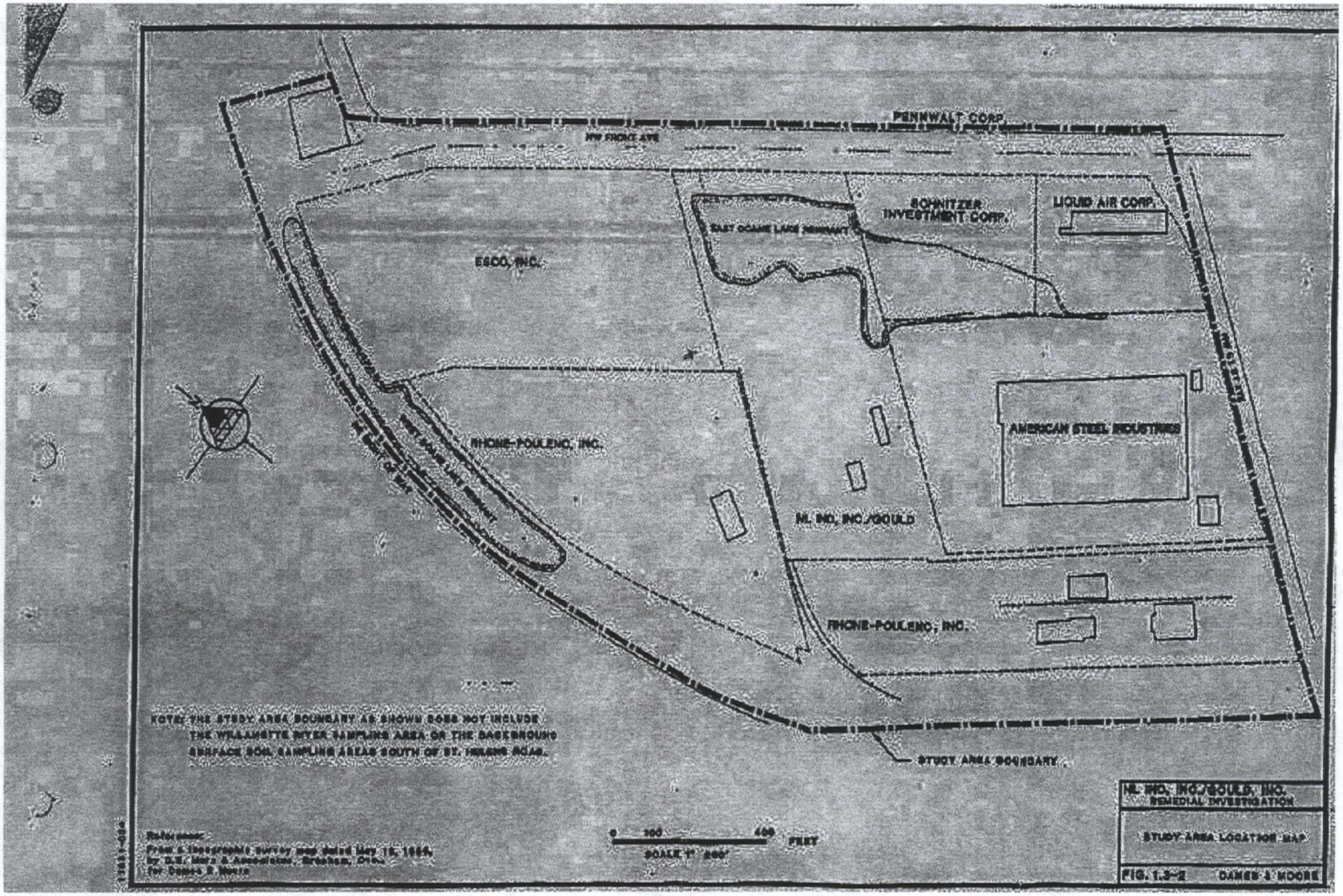
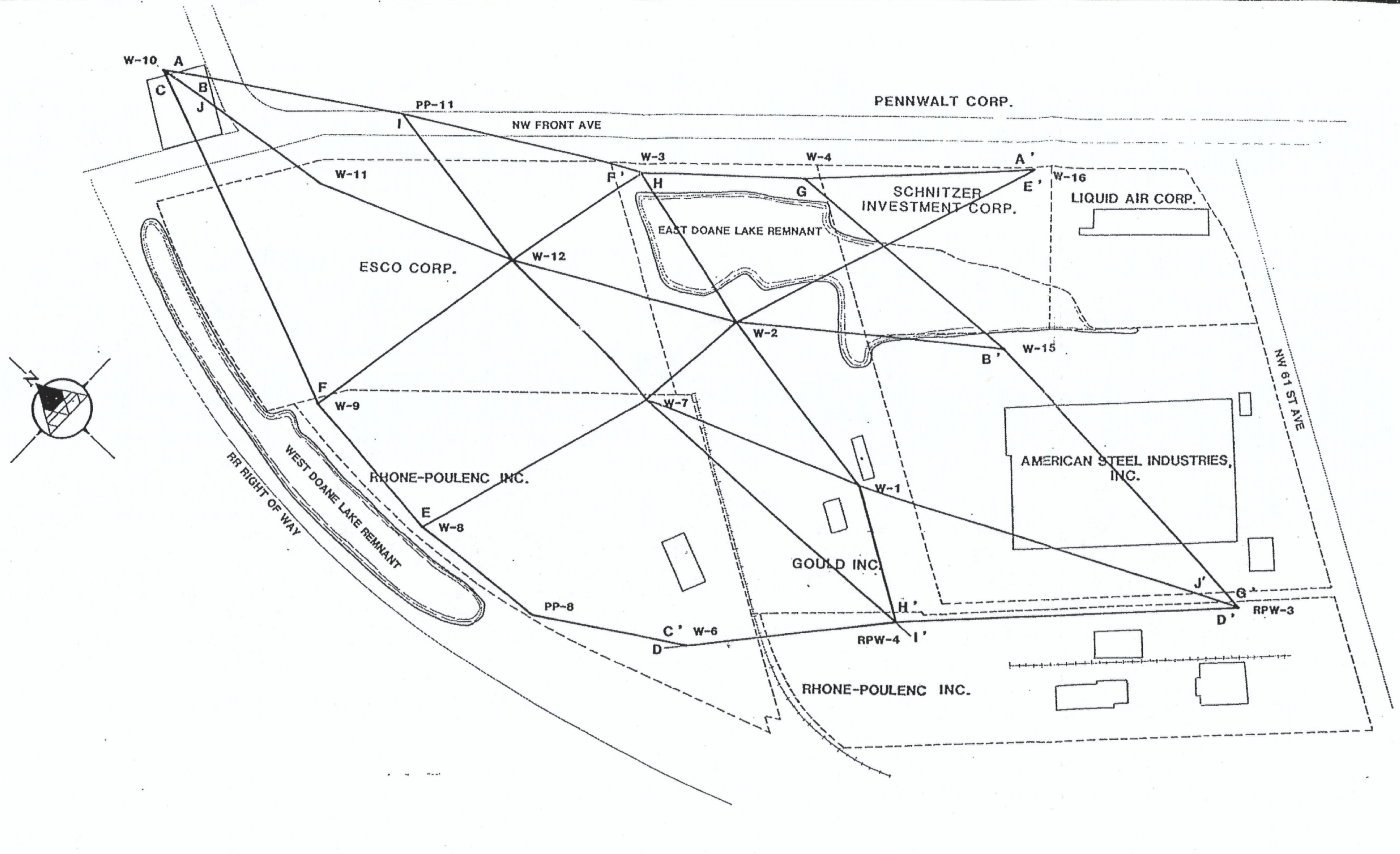


Figure 1.3-2.doc



Reference:
From a topographic survey map dated May 18, 1986, by D.E. Marx & Associates, Gresham, Ore., for Dames & Moore

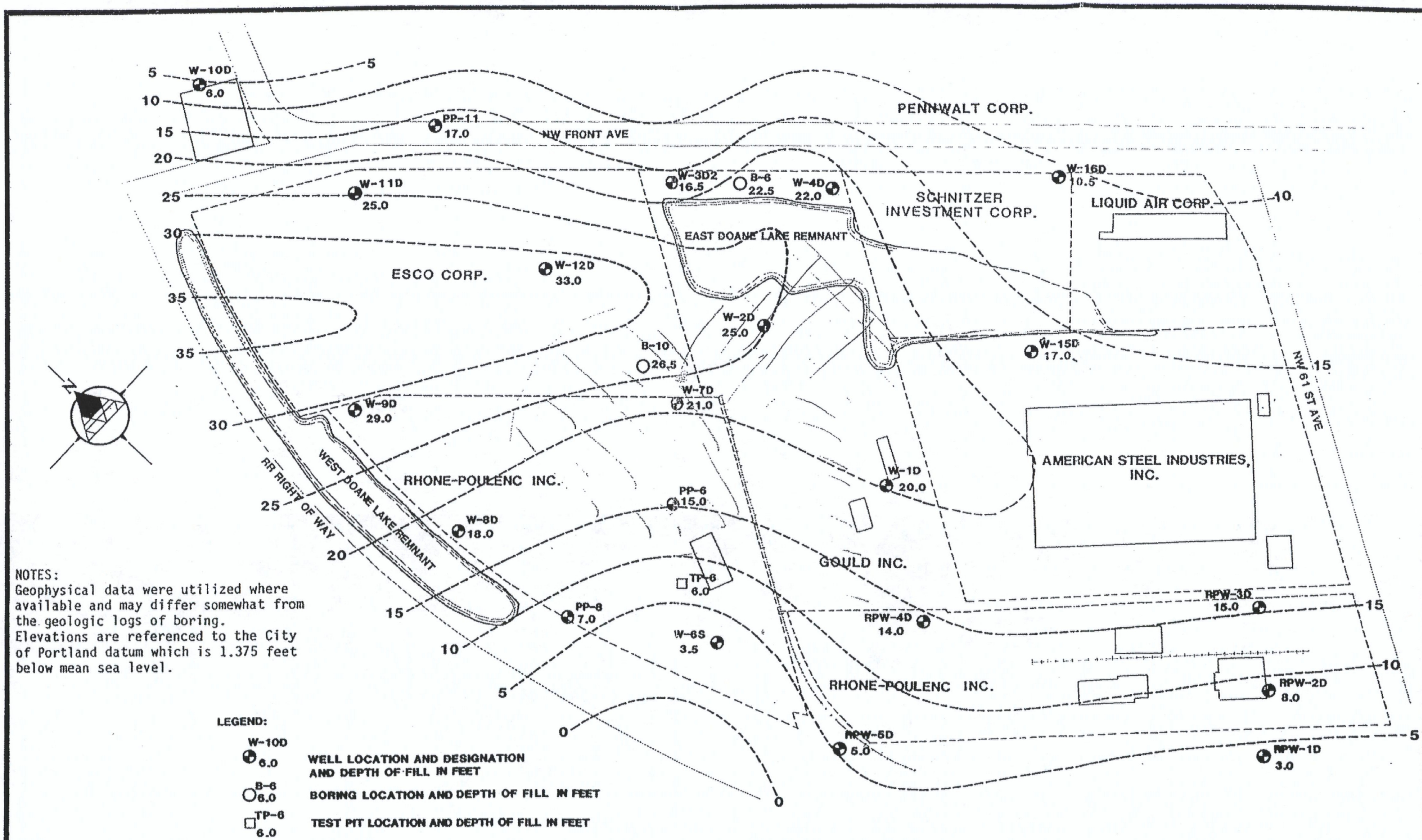
0 100 400 FEET
SCALE 1" 200'

11831-034

NL IND., INC./GOULD, INC:
REMEDIAL INVESTIGATION

CROSS-SECTION LOCATION MAP

FIG. 4.2-3 DAMES & MOORE



NOTES:
Geophysical data were utilized where available and may differ somewhat from the geologic logs of boring.
Elevations are referenced to the City of Portland datum which is 1.375 feet below mean sea level.

LEGEND:

W-10D 6.0 — WELL LOCATION AND DESIGNATION AND DEPTH OF FILL IN FEET

B-6 6.0 — BORING LOCATION AND DEPTH OF FILL IN FEET

TP-6 6.0 — TEST PIT LOCATION AND DEPTH OF FILL IN FEET

CONTOUR INTERVAL = 5 FEET

0 100 400 FEET
SCALE 1" 200'

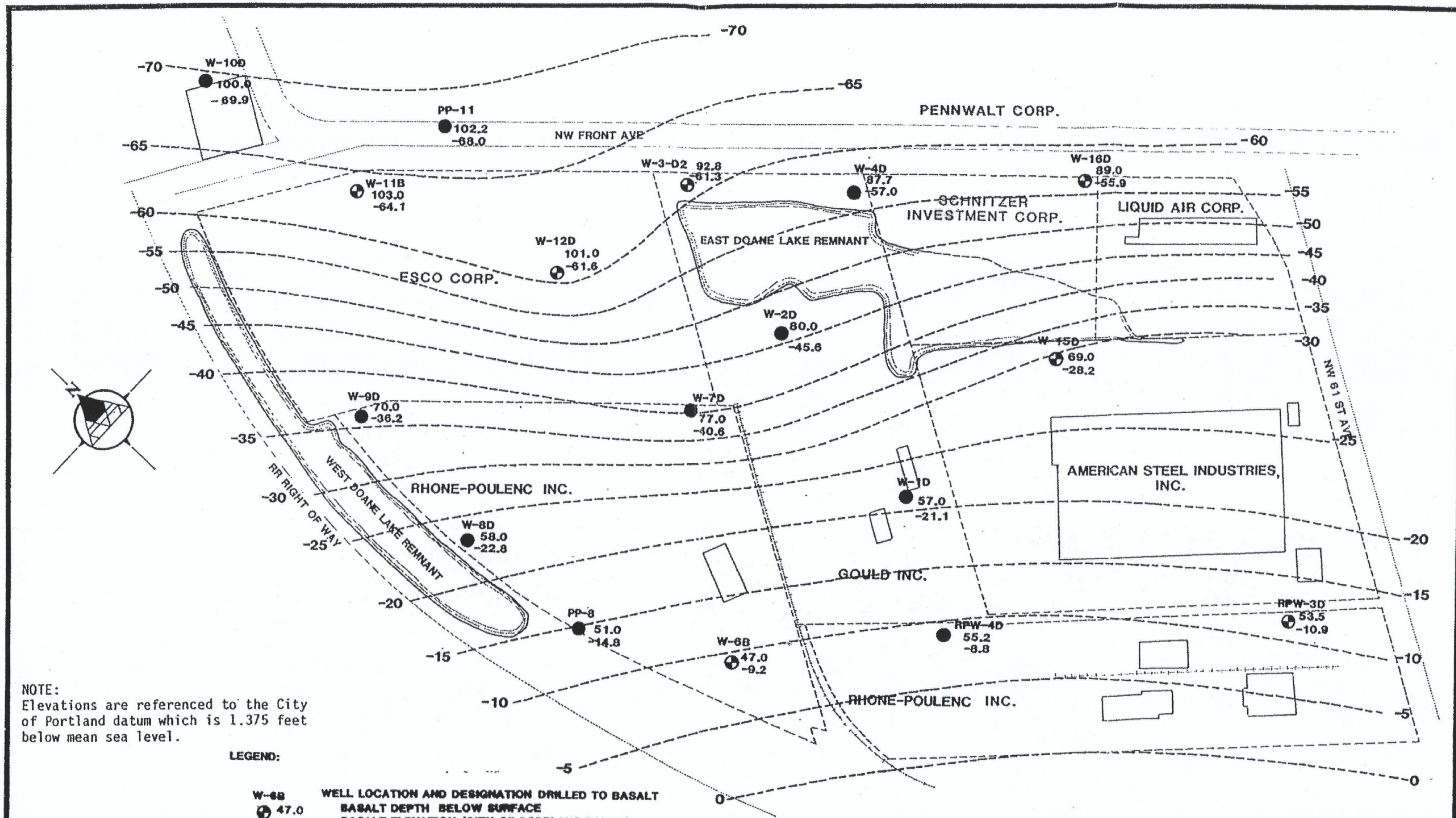
Reference:
From a topographic survey map dated May 18, 1986, by D.E. Marx & Associates, Gresham, Ore., for Dames & Moore

NL IND., INC./GOULD INC.
REMEDIAL INVESTIGATION

FILL THICKNESS MAP

FIG. 4.2-4 DAMES & MOORE

11831-034



NOTE:
Elevations are referenced to the City of Portland datum which is 1.375 feet below mean sea level.

LEGEND:

W-6B 47.0 -9.2 — WELL LOCATION AND DESIGNATION DRILLED TO BASALT; BASALT DEPTH BELOW SURFACE; BASALT ELEVATION (CITY OF PORTLAND DATUM)

● — WELL NOT DRILLED TO BASALT; BASALT DEPTH AND ELEVATION FROM CROSS-SECTIONS

CONTOUR INTERVAL = 5 FEET

Reference:
From a topographic survey map dated May 18, 1986, by D.E. Marx & Associates, Gresham, Ore., for Dames & Moore

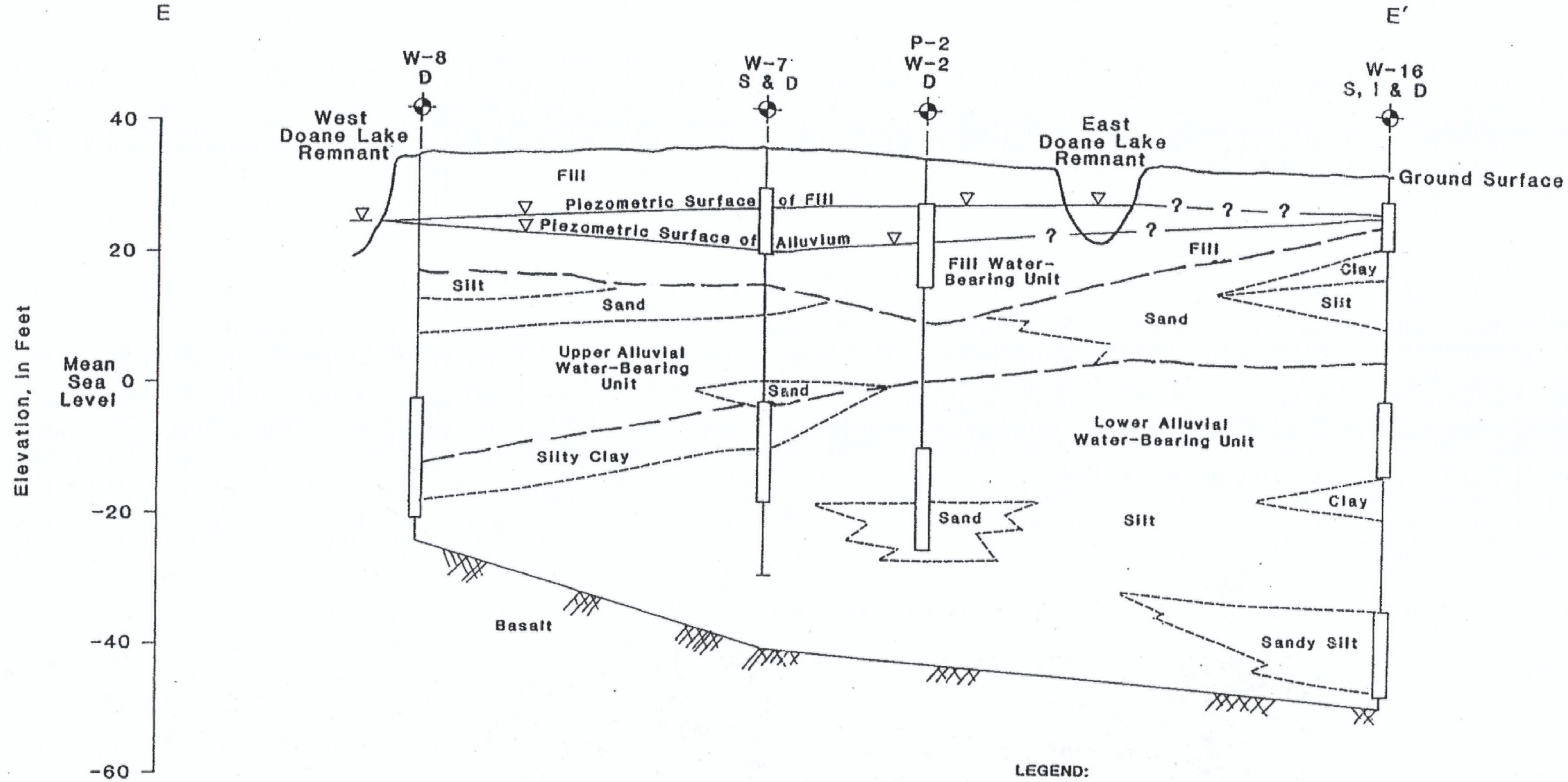
0 100 400 FEET
SCALE 1" 200'

11831-034

NL IND., INC./GOULD INC.
REMEDIAL INVESTIGATION

TOP OF BASALT

FIG. 4.2-5 DAMES & MOORE



LEGEND:

- INFERRED CONTACT OF WATER BEARING ZONES
- INFERRED CONTACT BETWEEN STRATIGRAPHIC UNITS
- PIEZOMETRIC SURFACE
- EQUIPOTENTIAL LINE
- K_H HORIZONTAL HYDRAULIC CONDUCTIVITY (CM/SEC)

NOTES:
Water levels measured on October 23, 1986.

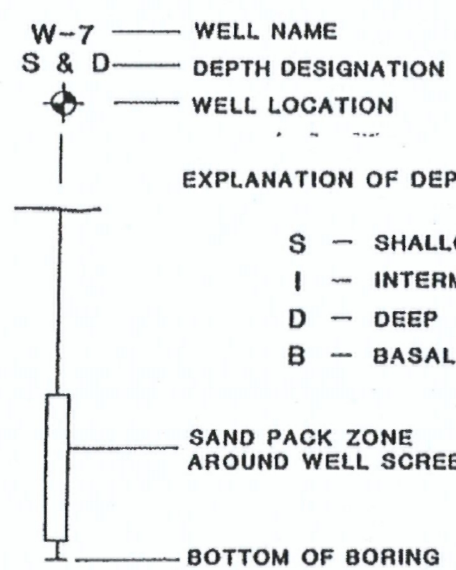
Soil unit contacts between borings are inferred and generalized. In nature, they are probably gradational and interfingering.

Stratigraphic (soil) units shown at boring locations are based on electrical resistivity logs where available and may differ from the geologic logs of borings.

The top of basalt where not encountered by drilling is inferred from contour maps and geologic cross-sections.

Cross-section location is shown on figure 4.2-1.

KEY TO WELL DIAGRAM:



EXPLANATION OF DEPTH DESIGNATIONS

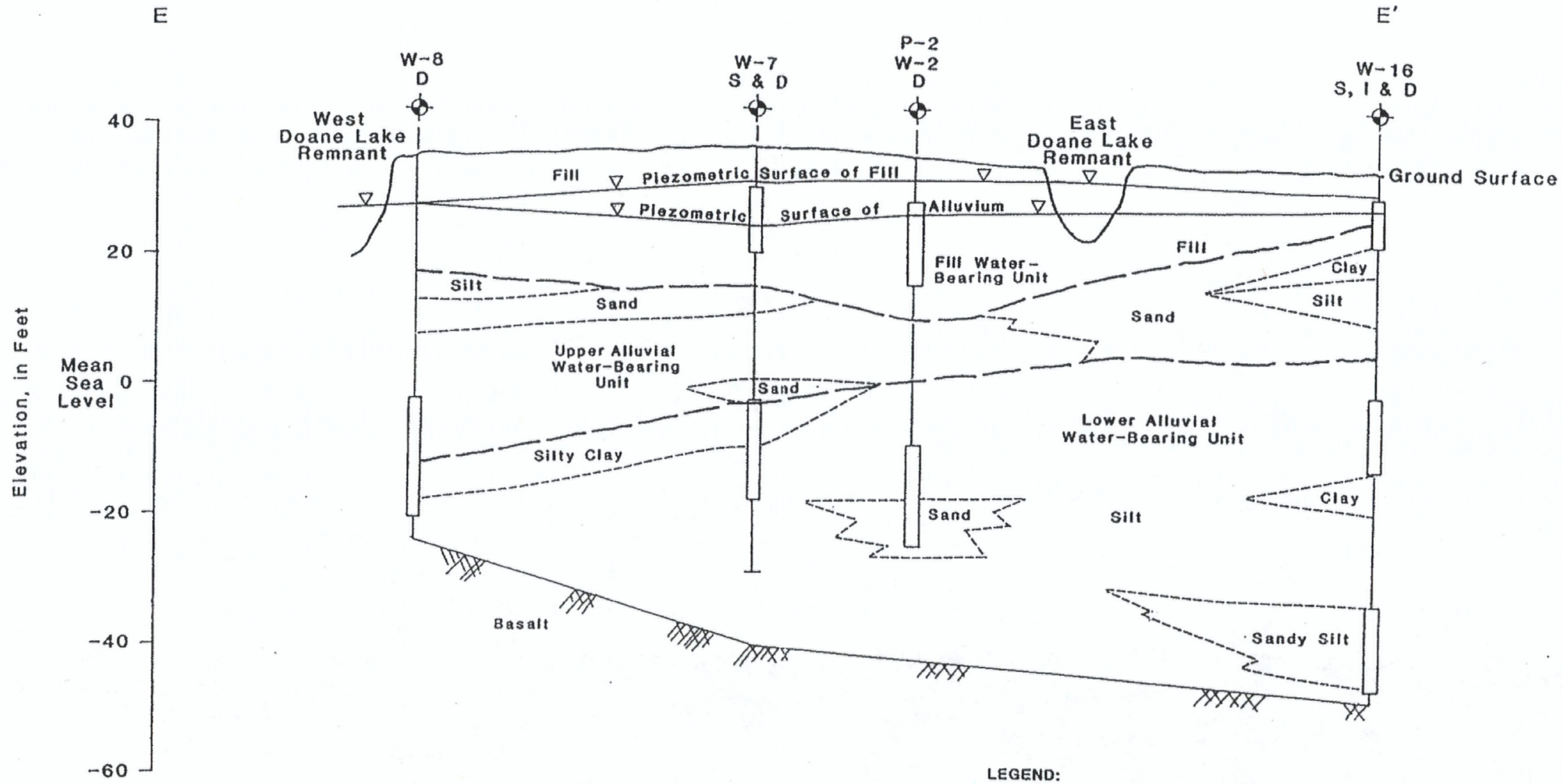
S — SHALLOW
I — INTERMEDIATE
D — DEEP
B — BASALT

NL IND., INC./GOULD, INC.
REMEDIAL INVESTIGATION

CONCEPTUAL HYDROGEOLOGIC CROSS-SECTION E-E′
OCTOBER 23, 1986

Fig. 4.4-5 DAMES & MOORE

Job No. 11831-034



NOTES:
Water levels measured on February 3, 1987.

Soil unit contacts between borings are inferred and generalized. In nature, they are probably gradational and interfingering.

Stratigraphic (soil) units shown at boring locations are based on electrical resistivity logs where available and may differ from the geologic logs of borings.

The top of basalt where not encountered by drilling is inferred from contour maps and geologic cross-sections.

Cross-section location is shown on figure 4.2-1.

KEY TO WELL DIAGRAM:

W-7 — WELL NAME
S & D — DEPTH DESIGNATION
— WELL LOCATION

EXPLANATION OF DEPTH DESIGNATIONS

S — SHALLOW
I — INTERMEDIATE
D — DEEP
B — BASALT

SAND PACK ZONE AROUND WELL SCREEN

BOTTOM OF BORING

LEGEND:

INFERRED CONTACT OF WATER BEARING ZONES

INFERRED CONTACT BETWEEN STRATIGRAPHIC UNITS

PIEZOMETRIC SURFACE

EQUIPOTENTIAL LINE

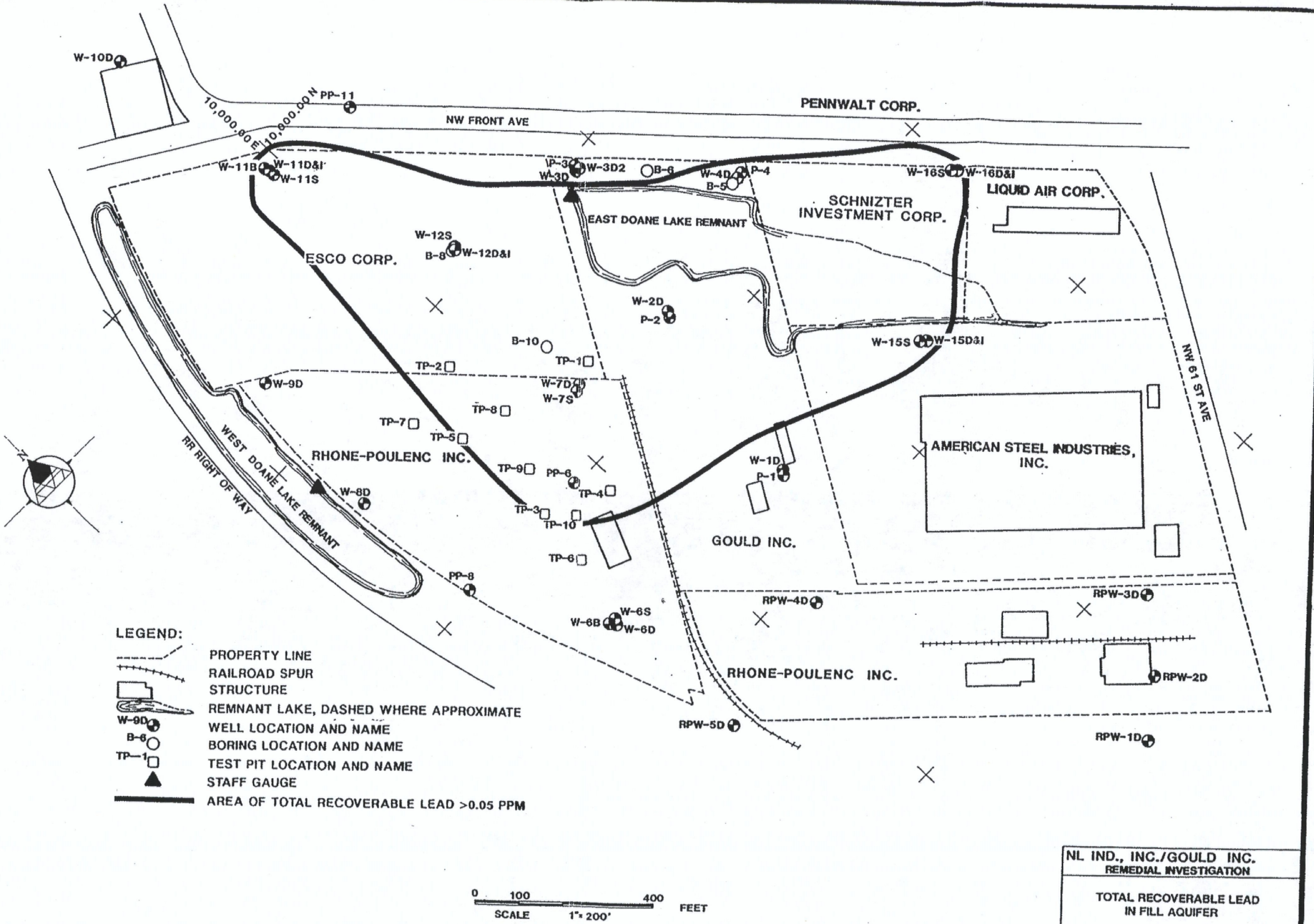
K_H HORIZONTAL HYDRAULIC CONDUCTIVITY (CM/SEC)

NL IND., INC./GOULD, INC.
REMEDIAL INVESTIGATION

CONCEPTUAL HYDROGEOLOGIC CROSS SECTION E-E'
FEBRUARY 3, 1987

Fig. 4.4-6 DAMES & MOORE

Job No. 11831-034



11831-034

NL IND., INC./GOULD INC.
REMEDIAL INVESTIGATION

TOTAL RECOVERABLE LEAD IN FILL AQUIFER

FIG. 4.5-14 DAMES & MOORE

Oregon DEQ

Home > Programs> Cleanup & Spills > ECSI Query > ECSI Site Details

Environmental Cleanup Site Information (ECSI) Database Site Summary Report - Details for Site ID 395

This report shows data entered as of July 28, 2006 at 1:13:58 PM

This report contains site details, organized into the following sections: 1) Site Photos (appears only if the site has photos); 2) General Site Information; 3) Site Characteristics; 4) Substance Contamination Information; 5) Investigative, Remedial and Administrative Actions; and 6) Site Environmental Controls (i.e., institutional or engineering controls; appears only if DEQ has applied one or more such controls to the site). A key to certain acronyms and terms used in the report appears at the bottom of the page.

Go to DEQ's Facility Profiler to see a site map as well is information on what other DEQ programs may be active at this site.

General Site Information

Site ID: 395	Site Name: Schnitzer Investment - Doane Lake		CERCLIS No: 980726210
Address:	6529 NW Front Ave. Portland 97210		
	County: Multnomah		Region: Northwest
Other location information:			
Investigation Status:	Suspect site requiring further investigation		
	Brownfield Site: No	NPL Site: No	Orphan Site: No; Study Area: No
Property:	Twnshp/Range/Sect: 1N , 1W , 13		Tax Lots: 33
	Latitude: 45.569 deg.	Longitude: -122.7467 deg.	Site Size: 6.3 acres
Other Site Names:	Air Liquide America Corp. - Acetylene Plant Liquid Air - Acetylene Plant Portland Harbor Sediment Study		

Site Characteristics

General Site Description:	The entire site is located on what historically was Doane Lake, which is now only a remnant lake. Therefore, this site is located on fill, which was placed between the 1940s and 1970s.
Site History:	
Contamination Information:	(8/30/95 GMW) Schnitzer built an acetylene manufacturing plant on the site in 1949. The process generates calcium hydroxide wastes, which Schnitzer discharged into East Doane Lake. Liquid Air Corporation (now called Air Liquide America Corp.) leased the plant beginning in 1969 and continued Doane Lake discharges of calcium hydroxide until 1981, when it began to sell it as product. In 1987, calcium hydroxide was detected in surface/subsurface soils, and in surface and groundwater around the lake, with many pH values over 12. Low levels of dissolved lead (<20 ppb) in shallow groundwater may have originated from the adjacent NL/Gould Superfund site (ECSI #49). Non-magnetic auto shredder wastes are known to have been deposited on the site by Schnitzer. In March 1995, Air Liquide reported a spill of 200 gallons of waste compressor oil within the

	building, which migrated onto soils just beyond the building. Air Liquide's cleanup of this soil resulted in the discovery of a subsurface layer of contaminated soil that appeared to be unrelated to the compressor oil spill. This deeper layer of soil contamination extended to a depth of at least 3 feet, and contained PCB 1254 and three chlorinated solvents: TCA, PCE, and 1,1-DCA. In 1993, Air Liquide removed a 1,500-gallon acetone UST, which was in good condition; nonetheless, low levels of acetone and MEK were detected in soil and groundwater in the tank vicinity.
Manner and Time of Release:	Past operating practices; on-site disposal of sludges and auto shredder wastes; releases associated with acetone UST; 2/21/95 spill of waste compressor oil. Lead documented in on-site groundwater may have originated from the adjacent NL/Gould Superfund site.
Hazardous Substances/Waste Types:	Calcium hydroxide, lead, arsenic, petroleum hydrocarbons, PCB, chlorinated solvents.
Pathways:	The site is located in a heavily industrialized area of NW Portland. The Willamette River is about 0.25 mile north and east of the site, and Forest Park is about 0.25 mile south and west of the site. Shallow groundwater is used by Air Liquide in its industrial processes, but is not used for drinking.
Environmental/Health Threats:	Groundwater contamination and possible direct-contact hazards.
Status of Investigative or Remedial Action:	(8/30/95 GMW) It is unknown whether the calcium hydroxide remaining at the site has a pH above 12.5. If so, it would be classified as a RCRA corrosive waste upon excavation. This material could present a direct-contact hazard to site occupants. Air Liquide cleaned up the majority of compressor oil released in February 1995, although a small area of contaminated soil remains under the building. Remediation of this material revealed pre-existing contamination from an unknown source. Residual levels of acetone and MEK from the former acetone UST are low and do not appear to threaten human health or the environment. Site Assessment recommends further evaluation of the extent and magnitude of caustic soils, as well as of the subsurface contamination discovered during Air Liquide's compressor oil cleanup.
Data Sources:	1) EPA CERCLA Preliminary Assessment. 2) Monitoring data associated with adjacent NL/Gould site (ECSI #49). 3) Correspondence from owner and/or operator. 4) Doane Lake Study Area files (ECSI #36). 5) DEQ Northwest Region spill file #95-074. 6) DEQ Northwest Region LUST file #26-93-211.

Substance Contamination Information

Substance	Media Contaminated	Concentration Level	Date Recorded
ACETONE	Groundwater	8.1 ppb	9/27/1994
ACETONE	Soil	180 ppb	9/27/1994
ARSENIC	Groundwater	740 ppb (dissolved)	2/18/1987
ARSENIC	Soil	16 ppm	7/15/1986
CALCIUM HYDROXIDE	Groundwater	Unknown	
CALCIUM HYDROXIDE	Soil	Unknown	
CALCIUM HYDROXIDE	Surface Water	Unknown	
CHROMIUM	Soil	390 ppm	7/15/1986
DICHLOROETHANE,1,1-	Soil	770 ppb	3/30/1995
LEAD	Groundwater	50 ppb (dissolved)	2/26/1987
LEAD	Soil	230 ppm	7/15/1986
METHYL ETHYL KETONE	Soil	47 ppb	9/27/1994

PCB 1254	Soil	310 ppb	3/30/1995
TETRACHLOROETHYLENE	Soil	530 ppb	3/30/1995
TRICHLOROETHANE,1,1,1-	Soil	7,400 ppb	3/30/1995

Investigative, Remedial and Administrative Actions

Action	Start Date	Compl. Date	Resp. Staff	Lead Pgm
Site added to CERCLIS	04/27/1983			
EPA Basic Preliminary Assessment	12/18/1987	12/21/1987		
EPA Preliminary Assessment 2	02/12/1988	02/12/1988		
No Further Remedial Action Planned under Federal program	02/12/1988	02/12/1988		
Site added to database	10/06/1988		Marilyn Daniel	SAS
Responsible party notified re 11/88 Inventory listing	11/30/1988			SAS
SITE EVALUATION	11/16/1992	11/16/1992	Kevin Dana	SAS
Listing Review completed	11/16/1992	11/16/1992	Kevin Dana	SAS
Insufficient information to list	11/17/1992	08/30/1995	Kevin Dana	SAS
State Expanded Preliminary Assessment recommended (XPA)	11/18/1992	11/18/1992	Kevin Dana	SAS
PRELIMINARY ASSESSMENT EQUIVALENT	08/29/1995	08/30/1995	Gil Wistar	SAS
Listing Review completed	08/30/1995	08/30/1995	Gil Wistar	SAS
Other remedial or investigative action recommended (Primary Action)	08/30/1995	08/30/1995	Gil Wistar	SAS
Proposal for Confirmed Release List recommended	08/30/1995	08/30/1995	Gil Wistar	SAS
Proposal for Inventory recommended	08/30/1995	08/30/1995	Gil Wistar	SAS
Facility proposed for Confirmed Release List	05/23/1996	05/23/1996	Gil Wistar	SAS
Facility proposed for Inventory	05/23/1996	05/23/1996	Gil Wistar	SAS
Extension requested by owner/operator	06/25/1996	06/25/1996		
Petition or request granted	06/27/1996	06/27/1996		
Owner/operator comments received on listing notification	08/23/1996	08/23/1996		
Owner/operator comments received on listing notification	09/27/1996	09/27/1996		
Insufficient information to list	09/20/2001	09/20/2001	Gil Wistar	SAS

Key to certain acronyms and terms in this report:

CERCLIS No.: The U.S. EPA's Hazardous Waste Site identification number, shown only if EPA has been involved at the site.

Region: DEQ divides the state into three regions, Eastern, Northwest, and Western; the regional office shown is responsible for site investigation/cleanup.

NPL Site: Is this site on EPA's National Priority List (i.e., a federal Superfund site)? (Y/N).

Orphan Site: Has DEQ's Orphan Program been active at this site? (Y/N). The Orphan Program uses state funds to clean up high-priority sites where owners and operators responsible for the contamination are absent, or are unable or unwilling to use their own resources for cleanup.

Study Area: Is this site a Study Area? (Y/N). Study Areas are groupings of individual ECSI sites that may be contributing to a larger, area-wide problem. ECSI assigns unique Site ID numbers to both individual sites and to Study Areas.

Pathways: A description of human or environmental resources that site

contamination could affect.
Lead Pgm: This column refers to the Cleanup Program affiliation of the DEQ employee responsible for the action shown. SAS or SAP = Site Assessment; VCS or VCP = Voluntary Cleanup; ICP = Independent Cleanup; SRS or SRP = Site Response (enforcement cleanup); ORP = Orphan Program.

For more information on this site you may contact Gil Wistar at (503) 229-5512, or via email at wistar.gil@deq.state.or.us or contact the Northwest regional office.

DEQ Online is the official web site for the Oregon Department of Environmental Quality.

SCHNITZER INVESTMENT - DOANE LAKE (AIR LIQUIDE AMERICAN CORP)

Oregon DEQ ECSI #: 395

6529 NW Front Avenue
DEQ Site Mgr: no PM
Latitude: 45.5694°
Longitude: -122.7472°
Township/Range/Section: 1N/1W/13

River Mile: ~ 7.5 West bank

LWG Member ☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only

1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the Schnitzer – Doane Lake/Air Liquide America (Air Liquide) site to the river is summarized in this section and Table 1, and supported in following sections.

1.1. Overland Transport

Contaminant transport via direct overland transport is not considered a pathway of concern at the Air Liquide site. The property is located about 1,000 feet away from the Willamette River.

1.2. Riverbank Erosion

Contaminant transport via riverbank erosion is not considered relevant at this site since the property does not include frontage along the river.

1.3. Groundwater

The Air Liquide site is located approximately 1,000 feet from the Willamette River and upgradient from the Arkema (formerly Atofina) site (ECSI #398). Based on the limited groundwater data available for the Air Liquide site, the primary contaminants of concern in groundwater are lead, arsenic, and calcium hydroxide. No information was available indicating that preferential pathways have been assessed at the site.

1.4. Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)

Historically, calcium hydroxide was discharged into East Doane Lake until 1981. Surface waters from East Doane Lake reportedly drained to the Willamette River via the East Doane Lake 48-inch outfall, although the City storm system was not constructed in this area until 1980, and no information is available to determine how the lake drained to the river prior to this.

Currently, the site has an existing GEN 12Z stormwater permit for industrial stormwater discharges. The stormwater collection system at the site was connected in 2000 to the City stormwater system that discharges into the river at City Outfall 22B (COP 2000). There are no overwater activities at the site.

1.5. Relationship of Upland Sources to River Sediments

See Final CSM Update.

1.6. Sediment Transport

Not applicable.

2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: May 31, 2005

3. PROJECT STATUS

Activity		Date(s)/Comments
PA/XPA	☒	EPA Basic PA – 12/21/1987 EPA PA 2 – 2/12/1988 State XPA recommended – 11/18/1992 PA Equivalent – 8/30/1995
RI	☐	
FS	☐	
Interim Action/Source Control	☐	
ROD	☐	
RD/RA	☐	
NFA	☐	

DEQ Portland Harbor Site Ranking (Tier 1, 2, or 3): Not ranked

4. SITE OWNER HISTORY

Primary Sources: DEQ 2004, Dames and Moore 1987b

Owner/Occupant	Type of Operation	Years
Liquid Air (Air Liquide American Corp)	Leased the plant, manufactured acetylene	1969 - present
Schnitzer Investment	Acetylene manufacturing plant	1949?

5. PROPERTY DESCRIPTION

The site is located on 6.3 acres in a heavily industrialized area of NW Portland. The Willamette River is about 0.25 mile north and east of the site, and Forest Park is about 0.25 mile south and west of the site. The entire site is located on fill, placed between the 1940s and 1970s in what was historically Doane Lake (DEQ 2004).

Properties adjacent to the Air Liquide site include Gould Electronics Inc. / NL Industries (ECSI #49) to the northwest, and American Steel Industries (ECSI #1398) to the south [see Supplemental Figure 1.3-2 from Dames & Moore (1987)]. Northwest Front Avenue borders the Air Liquide site to the north. The eastern Doane Lake remnant, (a.k.a East Doane Lake), formerly extended onto the Schnitzer Investment Corporation property, as shown in Supplemental Figure 1.3-2 from Dames & Moore (1987).

6. CURRENT SITE USE

The facility is currently operated by Air Liquide America Corporation for manufacturing acetylene on property leased from Schnitzer Investment Corporation. The property was also the location of auto shredder waste disposal from other Schnitzer facilities. The facility is currently listed as a hazardous waste generator (DEQ 2004).

7. SITE USE HISTORY

Dames and Moore (1987b) reported that the Air Liquide facility has been in service since the early 1940s. The plant was constructed between 1940 and 1948 for manufacturing acetylene gas. Other industrial gases were also received in bulk from outside sources and were distributed from this site (Dames and Moore 1987b). The production of acetylene gas is generated from mixing calcium carbide and water. Calcium hydroxide (hydrated lime), a byproduct of this process, was discharged into East Doane Lake until 1981 (DEQ 2004). The material was later placed in a diked holding area adjacent to the East Doane Lake remnant. An effort was made to reclaim lime from the lake remnant for an unspecified amount of time. At some point during the 1980s, Liquid Air Corporation began storing the lime byproduct in tanks for resale (Dames and Moore 1987b).

Site stormwater was discharged to East Doane Lake until 2000, when the site connected to the City stormwater conveyance system that discharges to City Outfall 22B (COP 2000). It is unclear how East Doane Lake was connected to the Willamette River. The City constructed a stormwater collection system along Front Avenue in 1980; prior to this, there was no public stormwater system in the area and no information is available to determine how the lake drained to the river. After the City system was constructed in 1980, there are no records (i.e., plumbing permits) for stormwater connections to the system from either the Schnitzer – Doane Lake/Air Liquide site (except for the 2000 connection discussed above) or the adjacent Gould site (COP file review – Dawn Sanders, May 2005). A recent RPAC TV survey of the Outfall 22B conveyance system (MRP 2004) showed a connection to the City storm system adjacent to the Gould site; when this connection was made is unknown.

8. CURRENT AND HISTORIC SOURCES AND COPCS

The understanding of historic and current potential upland and overwater sources at the site is summarized in Table 1. The following sections provide a brief overview of the potential sources and COPCs at the site requiring additional discussion.

8.1. Uplands

Potential upland sources on the Air Liquide property include the following:

- Historic fill material in the former East Doane Lake remnant consisting of metal slag, scrap metal, demolition debris, silty hydraulic dredge spoils, rock quarry spoils, shredded automobile interiors, shredded battery casings, and carbide sludge (Dames & Moore 1987b). DEQ (2004) also noted that Schnitzer disposed of non-magnetic auto shredder wastes on the site, although the exact location or duration of disposal was not noted.
- Surface, subsurface surface water, and groundwater concentrations of calcium hydroxide and lead in the area of the former remnant lake. According to DEQ (2004), many measurements of pH were over 12.
- Subsurface soil and groundwater concentrations of acetone and methylethylketone (MEK) in the area of the former acetone UST.
- Subsurface soil concentrations of PCB Aroclor 1254, 1,1,1-trichloroethane (TCA), tetrachloroethylene (PCE) and 1,1-dichloroethane (1,1-DCA) in 3-ft samples from an area contaminated by a compressor oil spill. However, the contaminated subsurface soil appeared to be unrelated to the oil spill.

DEQ (2004) has indicated that further investigation is necessary in the compressor oil cleanup area.

8.2. Overwater Activities

☐ Yes ☒ No

Overwater activities were not considered relevant at this site since the property does not include frontage along the river.

8.3. Spills

Known or documented spills at the Air Liquide site were obtained either from DEQ's Emergency Response Information System (ERIS) database for the period of 1995 to 2004, from oil and chemical spills recorded from 1982 to 2003 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], from facility-specific technical reports, or from DEQ correspondence. These spills are described below.

Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes/no)
2/21/95	Compressor oil	200	Malfunctioning oil/water separator resulted in release of oil (spill surface unknown)	Yes-soil cleanup

9. PHYSICAL SITE SETTING

Available subsurface information in the DEQ files for this site is limited. An RI/FS was conducted at the Gould Electronics site (ECSI #49) and includes geologic and hydrogeologic information for the Doane Lake area including the Air Liquide (Dames & Moore 1987a,b).

9.1. Geology

The site was largely covered by historic Doane Lake prior to receiving fill. The lake occupied a shallow, abandoned channel of the Willamette River (Dames & Moore 1987b). The fill material at the site varies from 10 to 25 feet in thickness [see Supplemental Figure 4.2-4 from Dames & Moore (1987b)] and consists of metal slag, scrap metal, demolition debris, silty hydraulic dredge spoils, rock quarry spoils, shredded automobile interiors, shredded battery casings, and carbide sludge (Dames & Moore 1987b).

Underlying the fill material are Quaternary alluvial deposits consisting of relatively continuous lenses of sand and layers of clayey silt or clay (Dames & Moore 1987b). Basalt flows of the Columbia River Basalt Group (CRBG) underlie the alluvium at a depth of 55 to 95 feet bgs [see Supplemental Figure 4.2-5 from Dames & Moore (1987b)].

9.2. Hydrogeology

Available records indicate that three monitoring wells have been completed at the Air Liquide site as part of the Gould Electronics RI/FS and are located in a cluster along the northeast property boundary. Each well penetrates specific hydrostratigraphic zones: shallow, intermediate, and deep (Dames & Moore 1987b).

Three primary water-bearing units have been delineated at the site: the fill material, the alluvium, and the CRBG (Dames & Moore 1987b). The fill unit is hydraulically connected to East Doane and West Doane Lake, as well as to the alluvial unit beneath it. However, groundwater in the fill does become perched in some areas due to layers of silt and/or clay within the alluvium (Dames & Moore 1987b). Groundwater flow within the fill is predominantly in a northerly direction (Dames & Moore 1987b).

The alluvial unit is hydraulically connected with the fill, East Doane and West Doane Lake, the Willamette River, and the CRBG (Dames & Moore 1987b). The alluvial unit can be divided into two water bearing subunits because the lower alluvium is generally more silty, and thus less permeable than the upper alluvium, which results in slightly differing groundwater levels between the two subunits (Dames & Moore 1987b). Groundwater flow within the alluvium is predominantly in a northerly direction (Dames & Moore 1987b).

Conceptual hydrogeologic cross-sections have been prepared for the Doane Lake Area including the Air Liquide site [see Supplemental Figures 4.2-3, 4.4-5, and 4.4-6 from Dames & Moore (1987b)].

10. NATURE AND EXTENT *(Current Understanding)*

The current understanding of the nature and extent of contamination for the uplands portions of the site is summarized in this section. When no data exist for a specific medium, a notation is made.

10.1. Soil

10.1.1. Upland Soil Investigations ☒ Yes ☐ No

Soil samples were collected in the vicinity of the compressor oil spill, in the subsurface and in the vicinity of the former acetone UST. Results from soil samples collected near the compressor oil spill appeared unrelated to the oil. The deeper layer of soil extended to a depth of 3 feet and contained PCB Aroclor 1254, TCA, PCE and 1,1-DCA. A small area of contaminated soils remains beneath the building. Residual levels of acetone and MEK were present in soils in the vicinity of the former acetone UST. The following table summarizes the level of soil contamination. These data are provided in DEQ's ECSI report (DEQ 2004).

Analyte	Sample Date	Maximum Concentration
Volatile Organic Compounds (VOCs)		
Acetone	9/27/1994	180 μg/kg
1,1-Dichloroethane	3/30/1995	770 μg/kg
Methyl ethyl ketone	9/27/1994	47 μg/kg
Tetrachloroethylene	3/30/1995	530 μg/kg
1,1,1-Trichloroethane	3/30/1995	7,400 μg/kg
Polychlorinated Biphenyls (PCBs)		
Aroclor 1254	3/30/1995	310 μg/kg
Metals		
Arsenic	7/15/1986	180 mg/kg
Chromium	7/15/1986	390 mg/kg
Lead	7/15/1986	230 mg/kg

mg/kg = milligrams per kilogram (ppm)
μg/kg = micrograms per kilogram (ppb)

10.1.2. Riverbank Samples ☐ Yes ☒ No

10.1.3. Summary

Soil samples collected during the compressor oil spill cleanup contained PCB Aroclor 1254, MEK, and chlorinated solvents. Residual levels of MEK and acetone were found in the vicinity of the former acetone UST.

10.2. Groundwater

10.2.1. Groundwater Investigations ☒ Yes ☐ No

Available documents indicate that three monitoring wells, W-16S, W-16I, and W-16D, have been completed at the Air Liquide facility as part of the Gould Electronics RI/FS and are located in a cluster along the northeast property boundary. Each well penetrates specific hydrostratigraphic zones: shallow, intermediate, and deep (Dames & Moore 1987b).

10.2.2. NAPL (Historic & Current) ☐ Yes ☒ No

Available documents indicate that NAPL has not been observed at the site.

10.2.3. Dissolved Contaminant Plumes ☒ Yes ☐ No

The Gould RI identified lead and arsenic at relatively high concentrations in groundwater at the Air Liquide site. However, concentrations of metals have decreased in the area as a result of remedial actions conducted in the source area at the Gould site (DEQ 2004). Historic discharges of calcium hydroxide into Doane Lake, which is hydraulically connected to shallow groundwater, increased the pH levels in area groundwater including at the Air Liquide site. The pH levels were high enough in the subsurface (greater than 12) to increase the leachability of lead and arsenic.

Plume Characterization Status ☐ Complete ☒ Incomplete

DEQ (2004) has indicated that further investigation is necessary in the compressor oil cleanup area.

Plume Extent

The lateral extent of lead in the Doane Lake area was assessed as part of the Gould RI (Dames & Moore 1987b). The estimated extent of total recoverable lead in the fill unit is shown on Supplemental Figure 4.5-14 from Dames & Moore (1987b). More recent groundwater data collected at the Gould site indicates that concentrations of metals have decreased in the area as a result of remedial actions conducted in the source area at the Gould site (DEQ 2004). However, no recent groundwater data (after 1994) were available in the file for the Air Liquide site.

Min/Max Detections

Groundwater analytical data presented below are based on data collected during the Gould RI (Dames & Moore 1987b) and the DEQ's ECSI site summary report (DEQ 2004).

Analyte	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)
Metals		
Arsenic (dissolved)	<5	740*
Lead (total)	<10	3,000*
VOCs		
Acetone	NA	8.1**

NA Not Available
* Samples collected in 1987
** Samples collected in 1994

In addition to the data presented above, the maximum pH level measured in the shallow aquifer at the Air Liquide site was 12.5 during the Gould RI (Dames & Moore 1987b).

Current Plume Data

No recent data are available.

Preferential Pathways

No information was available in the DEQ file to indicate that preferential pathways have been assessed at the site.

Downgradient Plume Monitoring Points (min/max detections)

No data are available.

Visual Seep Sample Data ☐ Yes ☒ No

This site is not located adjacent to the river.

Nearshore Porewater Data

This site is not located adjacent to the river.

Groundwater Plume Temporal Trend

Groundwater plume temporal trend information for the Air Liquide site is not documented.

10.2.4. Summary

Groundwater investigation data collected from the Schnitzer Investment - Doane Lake site is limited and is mostly associated with RI activities conducted at the Gould Electronics site. Available records indicate that lead and arsenic groundwater data were collected from the Air Liquide site in 1987 and 1994. Although more recent data collected from the Gould site indicates decreasing concentrations of metals after Gould site remedial actions, no records were available indicating recent water quality conditions at the Air Liquide site. The DEQ has indicated that additional investigation is necessary in the compressor oil cleanup area (DEQ 2004).

10.3. Surface Water

10.3.1. Surface Water Investigation ☒ Yes ☐ No

In 1987, surface water samples were collected around the lake. Calcium hydroxide was detected, and many pH values exceeded 10, as reported in DEQ (2004). No additional information was available in the DEQ reference document regarding other analytes tested during the sampling or the resulting concentrations.

10.3.2. General or Individual Stormwater Permit (Current or Past) ☒ Yes ☐ No

Permit Type	File Number	Start Date	Outfalls	Parameters/Frequency
GEN 12Z	107922	07/06/1993	Unknown	Standard[1]
GEN 12H	107922 (expired)	07/06/1993	Inactive industrial permit	Unknown

[1] Standard GEN12Z permit requirements include pH, oil and grease, total suspended solids, copper, lead, zinc, and visual monitoring. Monitored twice yearly.

There is no additional information available for Air Liquide's stormwater drainage system or discharge point in the reports reviewed. Air Liquide connected in 2000 to the City stormwater collection system that discharges to the river at City Outfall 22B (COP 2000). Historically, calcium hydroxide was discharged into East Doane Lake, which was also used for the disposal of battery acid, slag, and other wastes from neighboring facilities.

East Doane Lake reportedly discharged to the Willamette River through a 48-inch drainpipe beneath Front Avenue (Woodward-Clyde 1998); it is uncertain if this discharge refers to the City storm system constructed in 1980 and how drainage from East Doane Lake discharged to the river before the public system was installed.

Do other non-stormwater wastes discharge to the system? ☐ Yes ☒ No

10.3.3. Stormwater Data ☐ Yes ☒ No

10.3.4. Catch Basin Solids Data ☐ Yes ☒ No

10.3.5. Wastewater Permit ☐ Yes ☒ No

10.3.6. Wastewater Data ☐ Yes ☒ No

10.3.7. Summary

The site has an existing GEN 12Z stormwater permit for industrial stormwater discharges. Historically, calcium hydroxide discharged to East Doane Lake may have reached the Willamette River via the East Doane Lake 48-inch outfall or some other pathway.

10.4. Sediment

10.4.1. River Sediment Data ☐ Yes ☐ No

Sediment data were not collected as part of this site's investigations, but data were collected as part of the Gould facility investigations. It is known that the Schnitzer facility discharged process-generated calcium hydroxide wastes into East Doane Lake until 1981 and that surface water from this location discharged to the Willamette River. The following summary related to sediment sampling in the vicinity of the East Doane Lake outfall is taken from the Gould Electronic, Inc./NL Industries (ECSI #49) CSM Site Summary.

Sediment samples were collected from the Willamette River upstream and downstream of the East Doane Lake outfall during the Gould RI/FS (Dames & Moore 1987b). These samples generally had low metals concentrations (Dames & Moore 1987b); total lead ranged from 26 to 56 mg/kg, total arsenic ranged from 5.7 to 6.2 mg/kg, total chromium ranged from 9 to 26 mg/kg, and total zinc ranged from 72 to 82 mg/kg. Hexavalent chromium and cadmium concentrations were near or below detection limits (Dames & Moore 1987b).

More recent samples collected in the approximate vicinity of the former East Doane Lake outfall include those from the following surveys (Figure 1):

Survey	Survey Code	Year
City of Portland Outfall Project (CH2M Hill 2000)	WLCOFH02	2004
Gasco RI, Phase I (Hahn & Associates 1998)	WLCGSA96	1998
Portland Harbor Sediment Investigation (Weston 1998)	WR-WSI98	1998
Rhone-Poulenc 1st Quarter 1995 (Woodward-Clyde 1995)	WLCRPB95	1995
McCormick & Baxter RI, Phase I (PTI 1992)	MBCREOS1	1992

These samples include eight surface samples, plus one subsurface sample collected at SD-12. The results of these nine samples are summarized in Table 2.

10.4.2. Summary

See Final CSM Update.

11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES

11.1. Soil Cleanup/Source Control

Waste compressor oil was spilled inside a building and migrated onto soils just beyond the building. Air Liquide cleaned up the majority of the compressor oil released, although a small area of contaminated soil remains beneath the building. In 1993, Air Liquide removed a 1,500-gallon acetone UST. Low levels of acetone and MEK were detected in soil and groundwater in the vicinity.

11.2. Groundwater Cleanup/Source Control

No groundwater source controls have been implemented at the site.

11.3. Other

11.4. Potential for Recontamination from Upland Sources

See Final CSM Update.

12. BIBLIOGRAPHY / INFORMATION SOURCES

References cited:

CH2M Hill. 2000. Preliminary Evaluation of City Outfalls, Portland Harbor Study Area. Notebook 2, Westshore Stormwater and CSO Outfalls. Prepared for City of Portland Bureau of Environmental Services, Portland, OR. CH2M Hill, Portland, OR.

COP. 2000. Bureau of Buildings, Plumbing Permit, Permit 00-180620-PT. October 11, 2000. Accessed May 4, 2005. City of Portland, OR.

COP. 2005. City of Portland file review performed by Dawn Sanders, May 2005. City of Portland, Portland, OR.

DEQ. 2004. DEQ Site Summary Report – Details for Site ID 395. DEQ Environmental Cleanup Site (ECSI) Database. Accessed June 16, 2004. www.deq.state.or.us/wmc/ecsi/ecsidetail.asp?seqnbr=395.

Dames & Moore. 1987a. Hydrogeological Data Report Interim Evaluation, NL/Gould RI/FS, Portland, Oregon. Prepared for NL Industries, Inc. and Gould Inc. Dames & Moore, Portland, OR. (February 27, 1987).

Dames and Moore. 1987b. Remedial Investigation, Gould Site, Portland, Oregon. Final report. Prepared for NL Industries, Inc. and Gould Inc. Dames & Moore, Portland, OR. (November 16, 1987).

Hahn & Associates. 1998. Gasco Phase I Remedial Investigation Summary Report. Prepared for Gasco. Hahn & Associates, Portland, OR.

Integral, Windward, Kennedy/Jenks, Anchor Environmental, and Groundwater Solutions. 2004. Portland Harbor RI/FS Programmatic Work Plan. Prepared for the Lower Willamette Group, Portland, OR. Integral Consulting, Inc., Mercer Island, WA.

MRP Services. 2004. Site Data for Project: AMEC Environmental. TV Survey logs dated 6/22/2004.

PTI. 1992. McCormick & Baxter Remedial Investigation, Phase I. Prepared for McCormick & Baxter. PTI Environmental Services, Bellevue, WA.

Weston. 1998. Portland Harbor Sediment Investigation Report, Multnomah County, OR. Report No. 04000-019-036-AACE. Prepared for the U.S. Environmental Protection Agency and Oregon Department of Environmental Quality, Portland, OR. Roy F. Weston, Inc., Seattle, WA.

Woodward-Clyde. 1995. 1st Quarter 1995: Surface Water and Sediment. Prepared for Rhone-Poulenc AG Company. Woodward-Clyde International, Portland, OR.

Woodward-Clyde. 1998. NPDES Permit Modification, Rhone-Poulenc AG Company, File No. 74995, Permit No. 101180, EPA No. OR-000174-1. Woodward-Clyde International, Portland, OR.

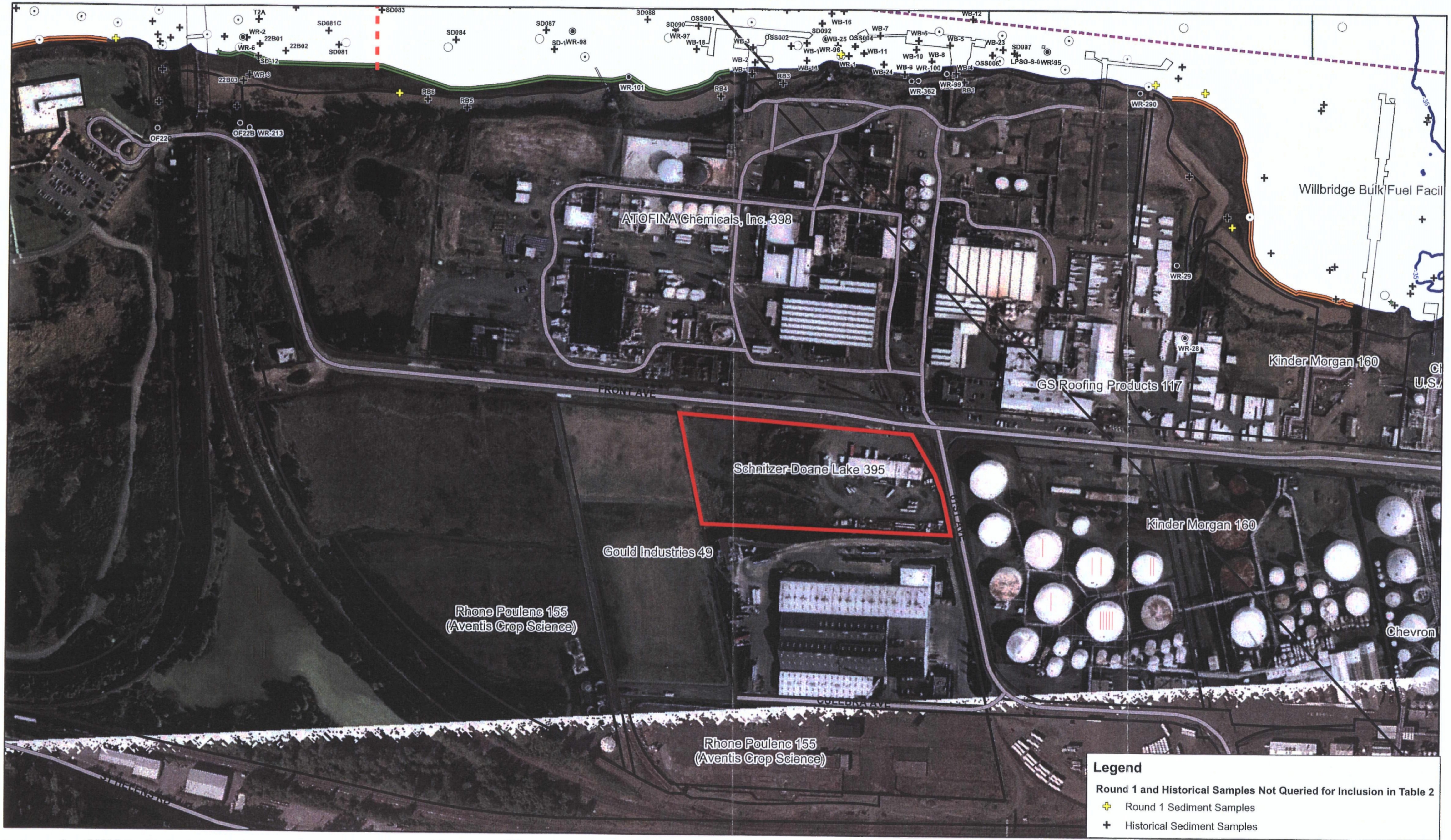
Figures:

Tables:

Supplemental Figures:

FIGURES

Figure 1: Site Features



integral

LWG Lower Willamette Group

Map Document: (C:\GIS\Projects\Portland_Harbor\LWG-Map-Projects\Conseptual_Site_Model\Sample_Locations.mxd)
Plot Date: 11/16/2004
Areal Photo Date: October 2001.
Base Map features from Portland Metro's RLIS.

Outfall information contained on this map is accurate according to available records; however, the City of Portland makes no warranty, xpressed or implied, as to the completeness or accuracy of the information published (updated March 2005).

- Outfalls
- Seep Photo Location (Not location of actual Seep)
- River Miles
- Navigation Channel
- -35ft. Contour (NAVD 88)
- Docks & In-water Structures
- Selected ECSI Site Property Boundary

Human Use Areas
- Dockside Worker
- Recreational Beach Use
- Transient

LWG Round 2 Proposed Sediment Samples
- Surface Sample Only
- Core & Surface Sample

0 100 200 400 Feet

DRAFT

DO NOT QUOTE OR CITE. This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Figure 1
Portland Harbor RI/FS
Conceptual Site Model
Schnitzer-Doane Lake
(Air Liquide)
ECSI 395

TABLES

Schnitzer -Doane Lake (Air Liquide American Corporation #395)
Table 1. Potential Sources and Transport Pathways Assessment

Potential Sources	Media Impacted					COIs																	Potential Complete Pathway				
						TPH			VOCs																		
Description of Potential Source	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	River Sediment	Gasoline-Range	Diesel - Range	Heavier - Range	Petroleum-Related (e.g. BTEX)	VOCs	Chlorinated VOCs	SVOCs	PAHs	Phthalates	Phenolics	Metals (Lead)	PCBs	Herbicides and Pesticides	Dioxins/Furans	Butyltins	Calcium Hydroxide waste	Acetone and MEK	Overland Transport	Groundwater	Direct Discharge - Overwater	Direct Discharge - Storm/Wastewater	Riverbank Erosion
Upland Areas																											
Discharge of calcium hydroxide waste in to Doane Lake	✓	✓	✓																		✓			?		✓	
1,500-gallon acetone UST		✓	✓								✓											✓					
Unknown source of subsurface contamination		✓									✓						✓										
Compressor oil spill	✓	✓							✓																		
Overwater Areas																											
Other Areas/Other Issues																											
Adjacent NL/Gould Superfund site	✓	✓	✓													✓										?	

Notes:
[1] All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.
✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.
? = There is not enough information to determine if source or COI is present or if pathway is complete.
Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychorinated biphenols

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Polychlorinated biphenyls (ug/kg)	1	0	0						4.7 U	4.7 U	4.7	4.7 U	4.7 U
surface	Total solids (percent)	2	2	100	26.5	65	45.8	26.5	26.5	26.5	65	45.8	26.5	26.5
surface	Total organic carbon (percent)	8	8	100	0.077	4.51	1.3	0.5	2.01	0.077	4.51	1.3	0.5	2.01
surface	Moisture (percent)	2	2	100	51	220	136	51	51	51	220	136	51	51
surface	pH (pH units)	2	2	100	6.4	7	6.7	6.4	6.4	6.4	7	6.7	6.4	6.4
surface	Specific Gravity (Std. Units)	2	2	100	2.49	2.71	2.6	2.49	2.49	2.49	2.71	2.6	2.49	2.49
surface	2,3,7,8-Tetrachlorodibenzo-p-dioxin (pg/g)	2	1	50	3.4	3.4	3.4	3.4	3.4	0.41 U	3.4	1.91	0.41 U	0.41 U
surface	Tetrachlorodibenzo-p-dioxin (pg/g)	2	2	100	11	14	12.5	11	11	11	14	12.5	11	11
surface	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (pg/g)	2	0	0						0.63 U	1.9 U	1.27	0.63 U	0.63 U
surface	Pentachlorodibenzo-p-dioxin (pg/g)	2	0	0						1.3 U	3.6 U	2.45	1.3 U	1.3 U
surface	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (pg/g)	2	0	0						0.58 U	4 U	2.29	0.58 U	0.58 U
surface	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (pg/g)	2	1	50	15	15	15	15	15	2.1 U	15	8.55	2.1 U	2.1 U
surface	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (pg/g)	2	1	50	9.4	9.4	9.4	9.4	9.4	1.1 U	9.4	5.25	1.1 U	1.1 U
surface	Hexachlorodibenzo-p-dioxin (pg/g)	2	2	100	5.2	85	45.1	5.2	5.2	5.2	85	45.1	5.2	5.2
surface	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (pg/g)	2	2	100	34	380	207	34	34	34	380	207	34	34
surface	Heptachlorodibenzo-p-dioxin (pg/g)	2	2	100	88	740	414	88	88	88	740	414	88	88
surface	Octachlorodibenzo-p-dioxin (pg/g)	2	2	100	330	3600	1970	330	330	330	3600	1970	330	330
surface	2,3,7,8-Tetrachlorodibenzofuran (pg/g)	2	2	100	8.5	19	13.8	8.5	8.5	8.5	19	13.8	8.5	8.5
surface	Tetrachlorodibenzofuran (pg/g)	2	2	100	70	91	80.5	70	70	70	91	80.5	70	70
surface	1,2,3,7,8-Pentachlorodibenzofuran (pg/g)	2	2	100	5	86	45.5	5	5	5	86	45.5	5	5
surface	2,3,4,7,8-Pentachlorodibenzofuran (pg/g)	2	1	50	22	22	22	22	22	3.8 U	22	12.9	3.8 U	3.8 U
surface	Pentachlorodibenzofuran (pg/g)	2	2	100	61	180	121	61	61	61	180	121	61	61
surface	1,2,3,4,7,8-Hexachlorodibenzofuran (pg/g)	2	2	100	11	140	75.5	11	11	11	140	75.5	11	11
surface	1,2,3,6,7,8-Hexachlorodibenzofuran (pg/g)	2	1	50	65	65	65	65	65	9.6 U	65	37.3	9.6 U	9.6 U
surface	1,2,3,7,8,9-Hexachlorodibenzofuran (pg/g)	2	0	0						0.41 U	3.5 U	1.96	0.41 U	0.41 U
surface	2,3,4,6,7,8-Hexachlorodibenzofuran (pg/g)	2	1	50	13	13	13	13	13	3.3 U	13	8.15	3.3 U	3.3 U
surface	Hexachlorodibenzofuran (pg/g)	2	2	100	83	260	172	83	83	83	260	172	83	83
surface	1,2,3,4,6,7,8-Heptachlorodibenzofuran (pg/g)	2	1	50	90	90	90	90	90	76 U	90	83	76 U	76 U
surface	1,2,3,4,7,8,9-Heptachlorodibenzofuran (pg/g)	2	2	100	6	33	19.5	6	6	6	33	19.5	6	6
surface	Heptachlorodibenzofuran (pg/g)	2	2	100	150	160	155	150	150	150	160	155	150	150
surface	Octachlorodibenzofuran (pg/g)	2	2	100	120	330	225	120	120	120	330	225	120	120
surface	Gravel (percent)	2	2	100	1.28	4.4	2.84	1.28	1.28	1.28	4.4	2.84	1.28	1.28
surface	Sand (percent)	2	2	100	56.21	79	67.6	56.21	56.21	56.21	79	67.6	56.2	56.21
surface	Fines (percent)	2	2	100	16.5	42.51	29.5	16.5	16.5	16.5	42.51	29.5	16.5	16.5
surface	Silt (percent)	2	2	100	13	39.13	26.1	13	13	13	39.13	26.1	13	13
surface	Clay (percent)	2	2	100	3.38	3.5	3.44	3.38	3.38	3.38	3.5	3.44	3.38	3.38
surface	Dalapon (ug/kg)	6	0	0						1.87 U	1000 U	256	2.41 U	500 U
surface	Dicamba (ug/kg)	6	0	0						1.91 U	100 U	26.5	2.47 U	50 U
surface	MCPA (ug/kg)	6	0	0						3.66 U	50000 U	12500	4.71 U	25000 U
surface	Dichloroprop (ug/kg)	6	0	0						3.08 U	250 U	65	3.97 U	120 U
surface	2,4-D (ug/kg)	6	1	16.7	21	21	21	21	21	3.24 U	250 U	67	4.18 U	120 U
surface	Silvex (ug/kg)	6	0	0						2.8 U	50 U	14.7	3.19 U	25 U
surface	2,4,5-T (ug/kg)	6	0	0						2.8 U	50 U	15.1	3.91 U	25 U
surface	2,4-DB (ug/kg)	6	2	33.3	18.7	23	20.9	18.7	18.7	2.34 U	1000 U	258	18.7	500 U
surface	Dinoseb (ug/kg)	6	0	0						2.68 U	250 U	63.8	3.45 U	120 U
surface	MCPP (ug/kg)	6	0	0						1.63 U	50000 U	12500	2.1 U	25000 U
surface	Aluminum (mg/kg)	5	5	100	5700	25500	17000	21000	23600	5700	25500	17000	21000	23600
surface	Antimony (mg/kg)	4	4	100	0.623 J	32.1	11.2	4.47 J	7.5 J	0.623 J	32.1	11.2	4.47 J	7.5 J
surface	Arsenic (mg/kg)	7	6	85.7	3.3 J	47.5	15.5	5.8 J	22.9	3.3 J	47.5	14.4	8 U	22.9
surface	Cadmium (mg/kg)	7	3	42.9	0.097	1.7	0.859	0.78	0.78	0.00189 U	1.7	0.496	0.3 U	0.78
surface	Chromium (mg/kg)	7	7	100	11.9 J	199	52.9	24.9	74	11.9 J	199	52.9	24.9	74
surface	Copper (mg/kg)	5	5	100	17.2 B	271 B	92.7	34	116 B	17.2 B	271 B	92.7	34	116 B

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Lead (mg/kg)	8	8	100	10	266 B	79.6	25	197 B	10	266 B	79.6	25	197 B
surface	Manganese (mg/kg)	2	2	100	487	560	524	487	487	487	560	524	487	487
surface	Mercury (mg/kg)	7	6	85.7	0.0207 J	0.625	0.217	0.1	0.36	0.0207 J	0.625	0.201	0.1 U	0.36
surface	Nickel (mg/kg)	5	5	100	16.6 B	138 B	61.1	25	101 B	16.6 B	138 B	61.1	25	101 B
surface	Selenium (mg/kg)	5	2	40	9.42	11	10.2	9.42	9.42	0.102 U	11	4.32	0.712 U	9.42
surface	Silver (mg/kg)	5	4	80	0.136	4.24	1.58	0.932	1	0.136	4.24	1.42	0.932	1
surface	Thallium (mg/kg)	2	1	50	1.2	1.2	1.2	1.2	1.2	1.2	8 U	4.6	1.2	1.2
surface	Zinc (mg/kg)	7	7	100	60.3	689 B	313	190	666 B	60.3	689 B	313	190	666 B
surface	Barium (mg/kg)	2	2	100	149	180	165	149	149	149	180	165	149	149
surface	Beryllium (mg/kg)	2	2	100	0.5	0.79	0.645	0.5	0.5	0.5	0.79	0.645	0.5	0.5
surface	Calcium (mg/kg)	2	2	100	6600	7010 J	6810	6600	6600	6600	7010 J	6810	6600	6600
surface	Chromium hexavalent (mg/kg)	1	1	100	0.17 G	0.17 G	0.17	0.17 G	0.17 G	0.17 G	0.17 G	0.17	0.17 G	0.17 G
surface	Cobalt (mg/kg)	2	2	100	15.4	27	21.2	15.4	15.4	15.4	27	21.2	15.4	15.4
surface	Iron (mg/kg)	2	2	100	40000	41400	40700	40000	40000	40000	41400	40700	40000	40000
surface	Magnesium (mg/kg)	2	2	100	5300	5400	5350	5300	5300	5300	5400	5350	5300	5300
surface	Potassium (mg/kg)	2	2	100	670	930	800	670	670	670	930	800	670	670
surface	Sodium (mg/kg)	2	2	100	530	917	724	530	530	530	917	724	530	530
surface	Vanadium (mg/kg)	2	2	100	89.1	95	92.1	89.1	89.1	89.1	95	92.1	89.1	89.1
surface	2-Methylnaphthalene (ug/kg)	7	5	71.4	4.14	280	68.3	24	24.8	4.14	330 U	143	24.8	330 U
surface	Acenaphthene (ug/kg)	8	5	62.5	6.18	370 J	90.3	17.3	46	6.18	370 J	145	46	330 U
surface	Acenaphthylene (ug/kg)	8	4	50	10.8	250 J	105	17.4	143	10.8	330 U	144	50 U	330 U
surface	Anthracene (ug/kg)	8	5	62.5	13.8	310 J	97.4	60	85.4	13.8	330 U	150	60	330 U
surface	Fluorene (ug/kg)	8	5	62.5	5.74	290 J	72.1	22.6	34	5.74	330 U	134	34	330 U
surface	Naphthalene (ug/kg)	8	5	62.5	10.4	410 J	110	55	60.1	10.4	410 J	157	55	330 U
surface	Phenanthrene (ug/kg)	8	6	75	18.1	930 J	224	60	230	18.1	930 J	250	68	330 U
surface	Low Molecular Weight PAH (ug/kg)	8	6	75	60 A	2560 A	602	94.68 A	425 A	60 A	2560 A	534	330 UA	425 A
surface	Dibenz(a,h)anthracene (ug/kg)	8	5	62.5	21.3	150	73.2	74	91.3	21.3	330 U	135	74	330 U
surface	Benz(a)anthracene (ug/kg)	8	5	62.5	59.2	650 J	240	189	240	50 U	650 J	239	189	330 U
surface	Benzo(a)pyrene (ug/kg)	8	6	75	55	790	292	78.4	404	55	790	302	330 U	404
surface	Benzo(b)fluoranthene (ug/kg)	4	2	50	67	300	184	67	67	67	330 U	257	300	330 U
surface	Benzo(g,h,i)perylene (ug/kg)	8	6	75	61.8	470	219	110	400	61.8	470	247	200	400
surface	Benzo(k)fluoranthene (ug/kg)	4	1	25	310	310	310	310	310	50 U	330 U	255	310	330 U
surface	Chrysene (ug/kg)	8	6	75	53	860 J	294	94.3	340	53	860 J	303	330 U	340
surface	Fluoranthene (ug/kg)	8	6	75	92.7	1300 J	372	130	440	92.7	1300 J	362	176	440
surface	Indeno(1,2,3-cd)pyrene (ug/kg)	8	6	75	46.4	340	155	55	248	46.4	340	199	190	330 U
surface	Pyrene (ug/kg)	8	6	75	113	1400 J	462	190	580	113	1400 J	429	330 U	580
surface	Benzo(b+k)fluoranthene (ug/kg)	8	6	75	67 A	910	376	116	610 A	67 A	910	364	330 UA	610 A
surface	High Molecular Weight PAH (ug/kg)	8	6	75	657.9 A	6800 A	2420	710.7 A	3034 A	330 UA	6800 A	1900	660 A	3034 A
surface	Polycyclic Aromatic Hydrocarbons (ug/kg)	8	6	75	720 A	9360 A	3020	786.02 A	3459 A	330 UA	9360 A	2350	753 A	3459 A
surface	Anthanthrene (ug/kg)	1	0	0						79 U	79 U	79	79 U	79 U
surface	Benzo(e)pyrene (ug/kg)	1	1	100	530	530	530	530	530	530	530	530	530	530
surface	7,12-Dimethylbenz(a)anthracene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	1-Chloronaphthalene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	2-Naphthylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	2,4'-Dichlorobiphenyl (ug/kg)	3	2	66.7	1.21 P	3.69 P	2.45	1.21 P	1.21 P	0.45 U	3.69 P	1.78	1.21 P	1.21 P
surface	2,2',5-Trichlorobiphenyl (ug/kg)	3	1	33.3	0.61 JP	0.61 JP	0.61	0.61 JP	0.61 JP	0.32 U	0.61 JP	0.457	0.44 U	0.44 U
surface	2,4,4'-Trichlorobiphenyl (ug/kg)	3	2	66.7	0.22 JP	2.65 P	1.44	0.22 JP	0.22 JP	0.22 JP	2.65 P	1.05	0.28 U	0.28 U
surface	2,2',3,5'-Tetrachlorobiphenyl (ug/kg)	3	2	66.7	0.44 P	1.56 P	1	0.44 P	0.44 P	0.25 U	1.56 P	0.75	0.44 P	0.44 P
surface	2,2',5,5'-Tetrachlorobiphenyl (ug/kg)	3	2	66.7	0.41 JP	6.11	3.26	0.41 JP	0.41 JP	0.4 U	6.11	2.31	0.41 JP	0.41 JP
surface	2,3',4,4'-Tetrachlorobiphenyl (ug/kg)	3	3	100	0.72 P	2.88	1.62	1.27 P	1.27 P	0.72 P	2.88	1.62	1.27 P	1.27 P
surface	2,2',4,5,5'-Pentachlorobiphenyl (ug/kg)	3	3	100	0.76	1.12	0.953	0.98	0.98	0.76	1.12	0.953	0.98	0.98
surface	2,3,3',4,4'-Pentachlorobiphenyl (ug/kg)	3	0	0						0.14 U	0.25 U	0.197	0.2 U	0.2 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	2,3',4,4',5-Pentachlorobiphenyl (ug/kg)	3	0	0						0.17 U	0.3 U	0.237	0.24 U	0.24 U
surface	2,2',3,3',4,4'-Hexachlorobiphenyl (ug/kg)	3	2	66.7	0.34 JP	0.53 JP	0.435	0.34 JP	0.34 JP	0.15 U	0.53 JP	0.34	0.34 JP	0.34 JP
surface	2,2',3,4,4',5'-Hexachlorobiphenyl (ug/kg)	3	3	100	0.99 JP	3.2	1.87	1.42 P	1.42 P	0.99 JP	3.2	1.87	1.42 P	1.42 P
surface	2,2',4,4',5,5'-Hexachlorobiphenyl (ug/kg)	3	3	100	2.24	5.41	3.48	2.8	2.8	2.24	5.41	3.48	2.8	2.8
surface	2,2',3,3',4,4',5-Heptachlorobiphenyl (ug/kg)	3	2	66.7	0.68 P	2.31 P	1.5	0.68 P	0.68 P	0.28 U	2.31 P	1.09	0.68 P	0.68 P
surface	2,2',3,4,4',5,5'-Heptachlorobiphenyl (ug/kg)	3	3	100	0.69 J	5.71	2.62	1.45	1.45	0.69 J	5.71	2.62	1.45	1.45
surface	2,2',3,4',5,5',6-Heptachlorobiphenyl (ug/kg)	3	2	66.7	0.58	4.36	2.47	0.58	0.58	0.31 U	4.36	1.75	0.58	0.58
surface	2,4'-DDD (ug/kg)	3	3	100	115	154	129	117	117	115	154	129	117	117
surface	2,4'-DDE (ug/kg)	3	3	100	15.3	22.6	18.6	17.8	17.8	15.3	22.6	18.6	17.8	17.8
surface	2,4'-DDT (ug/kg)	3	3	100	11.5	39.6	28.2	33.5	33.5	11.5	39.6	28.2	33.5	33.5
surface	4,4'-DDD (ug/kg)	7	6	85.7	8.2	315	183	195	250	0.54 U	315	157	195	250
surface	4,4'-DDE (ug/kg)	7	4	57.1	10	67.9	37.4	19.5	52.2	0.54 U	95 U	37.3	19.5	67.9
surface	4,4'-DDT (ug/kg)	7	6	85.7	54.6	990	393	75.4	900 J	16 U	990	339	75.4	900 J
surface	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	7	7	100	8.2 A	1230 A	515	380 A	900 A	8.2 A	1230 A	515	380 A	900 A
surface	Aldrin (ug/kg)	7	0	0						0.54 U	48 U	9.79	1.61 U	8 U
surface	alpha-Hexachlorocyclohexane (ug/kg)	7	1	14.3	1.52 J	1.52 J	1.52	1.52 J	1.52 J	0.54 U	48 U	9.71	1.52 J	8 U
surface	beta-Hexachlorocyclohexane (ug/kg)	7	0	0						0.54 U	48 U	9.78	1.58 U	8 U
surface	delta-Hexachlorocyclohexane (ug/kg)	7	1	14.3	5.33	5.33	5.33	5.33	5.33	0.54 U	48 U	10.3	5.33	8 U
surface	gamma-Hexachlorocyclohexane (ug/kg)	7	0	0						0.54 U	48 U	9.72	1.43 U	8 U
surface	cis-Chlordane (ug/kg)	5	1	20	16.4	16.4	16.4	16.4	16.4	0.47 U	48 U	13.5	1.49 U	16.4
surface	trans-Chlordane (ug/kg)	3	3	100	2.13 J	8.87	6.52	8.55	8.55	2.13 J	8.87	6.52	8.55	8.55
surface	Oxychlordane (ug/kg)	3	1	33.3	10.7	10.7	10.7	10.7	10.7	2.5 U	10.7	5.65	3.74 U	3.74 U
surface	cis-Nonachlor (ug/kg)	3	1	33.3	21.1	21.1	21.1	21.1	21.1	2.5 U	21.1	9.11	3.74 U	3.74 U
surface	trans-Nonachlor (ug/kg)	3	0	0						2.5 U	3.74 U	3.07	2.96 U	2.96 U
surface	Dieldrin (ug/kg)	7	1	14.3	2.78 J	2.78 J	2.78	2.78 J	2.78 J	0.54 U	95 U	18.9	2.78 J	16 U
surface	alpha-Endosulfan (ug/kg)	7	0	0						0.54 U	48 U	9.78	1.59 U	8 U
surface	beta-Endosulfan (ug/kg)	7	0	0						0.54 U	95 U	18.7	1.45 U	16 U
surface	Endosulfan sulfate (ug/kg)	7	0	0						0.54 U	95 U	18.7	1.36 U	16 U
surface	Endrin (ug/kg)	7	0	0						0.54 U	95 U	18.7	1.35 U	16 U
surface	Endrin aldehyde (ug/kg)	7	0	0						0.95 U	95 U	15.7	1.53 U	5 U
surface	Endrin ketone (ug/kg)	7	0	0						0.47 U	95 U	18.6	1.05 U	16 U
surface	Heptachlor (ug/kg)	7	0	0						0.54 U	48 U	9.67	1.29 U	8 U
surface	Heptachlor epoxide (ug/kg)	7	2	28.6	8.9	14	11.5	8.9	8.9	0.54 U	48 U	12.6	8 U	14
surface	Methoxychlor (ug/kg)	7	1	14.3	17.3 J	17.3 J	17.3	17.3 J	17.3 J	0.95 U	480 U	95.3	17.3 J	80 U
surface	Toxaphene (ug/kg)	7	0	0						15.7 U	4800 U	743	25 U	160 U
surface	Azinphosmethyl (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Bromoxynil (ug/kg)	2	0	0						120 U	250 U	185	120 U	120 U
surface	gamma-Chlordane (ug/kg)	2	0	0						0.47 U	48 U	24.2	0.47 U	0.47 U
surface	Chlordane (cis & trans) (ug/kg)	5	0	0						3.52 U	80 U	34.6	5.27 U	80 U
surface	Chlorpyrifos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Coumaphos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Demeton (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Diazinon (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Dichlorvos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Disulfoton (ug/kg)	2	1	50	56	56	56	56	56	50 U	56	53	50 U	50 U
surface	Ethoprop (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Fensulfothion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Fenthion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Malathion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Merphos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Methyl parathion (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Mevinphos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Naled (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Perthane (ug/kg)	2	0	0						100 U	100 U	100	100 U	100 U
surface	Phorate (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Prothiophos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Ronnel (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Stirofos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Sulprofos (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Tetraethyl pyrophosphate (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Trichloronate (ug/kg)	2	0	0						50 U	50 U	50	50 U	50 U
surface	Diesel fuels (mg/kg)	4	3	75	27.2	159	88	77.9	77.9	27.2	159	78.5	50 U	77.9
surface	Lube Oil (mg/kg)	4	3	75	297	482	379	357	357	100 U	482	309	297	357
surface	Natural gasoline (mg/kg)	1	0	0						20 U	20 U	20	20 U	20 U
surface	2,3,4,6-Tetrachlorophenol (ug/kg)	6	0	0						16.9 U	1600 U	557	24.3 U	1600 U
surface	2,4,5-Trichlorophenol (ug/kg)	7	0	0						16.9 U	330 U	139	96 U	330 U
surface	2,4,6-Trichlorophenol (ug/kg)	7	0	0						16.9 U	120 U	58.1	51 U	96 U
surface	2,4-Dichlorophenol (ug/kg)	7	0	0						16.9 U	160 U	52.5	26 U	64 U
surface	2,4-Dimethylphenol (ug/kg)	7	0	0						16.9 U	64 U	28.8	24.3 U	32 U
surface	2,4-Dinitrophenol (ug/kg)	7	0	0						26 U	190 UJ	106	96.1 U	160 UJ
surface	2-Chlorophenol (ug/kg)	7	0	0						16.9 U	79 U	35.5	24.3 U	64 U
surface	2-Methylphenol (ug/kg)	5	0	0						16.9 U	320 U	79.9	19.2 U	24.3 U
surface	2-Nitrophenol (ug/kg)	7	0	0						16.9 U	96 U	46.5	26 U	79 U
surface	4,6-Dinitro-2-methylphenol (ug/kg)	7	0	0						51 U	320 U	140	120 U	190 U
surface	4-Chloro-3-methylphenol (ug/kg)	7	0	0						16.9 U	160 U	49.8	26 U	64 U
surface	4-Methylphenol (ug/kg)	5	2	40	48	570	309	48	48	33.7 U	570	148	48	48.5 U
surface	4-Nitrophenol (ug/kg)	10	0	0						1.86 U	240 U	81.5	84.3 U	121 U
surface	Pentachlorophenol (ug/kg)	10	1	10	9.66 J	9.66 J	9.66	9.66 J	9.66 J	2.39 U	160 UJ	50.4	19.2 U	120 U
surface	Phenol (ug/kg)	7	0	0						16.9 U	160 U	47.1	24.3 U	64 U
surface	2,3,4,5-Tetrachlorophenol (ug/kg)	1	0	0						79 UJ	79 UJ	79	79 UJ	79 UJ
surface	2,3,5,6-Tetrachlorophenol (ug/kg)	3	0	0						16.9 U	24.3 U	20.1	19.2 U	19.2 U
surface	2,4-Dichloro-6-methylphenol (ug/kg)	2	0	0						230 U	570 U	400	230 U	230 U
surface	2,6-Dichlorophenol (ug/kg)	3	0	0						150 U	370 U	227	160 U	160 U
surface	4-Chloro-o-cresol (ug/kg)	2	0	0						92 U	230 U	161	92 U	92 U
surface	4-Chlorophenol (ug/kg)	2	0	0						370 U	910 U	640	370 U	370 U
surface	Cresol (ug/kg)	2	0	0						46 U	110 U	78	46 U	46 U
surface	Dimethyl phthalate (ug/kg)	7	0	0						16 UJ	330 U	108	19.2 U	330 U
surface	Diethyl phthalate (ug/kg)	7	0	0						16 UJ	330 U	108	19.2 U	330 U
surface	Dibutyl phthalate (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Butylbenzyl phthalate (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Di-n-octyl phthalate (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Bis(2-ethylhexyl) phthalate (ug/kg)	7	3	42.9	210	250	237	250	250	16.9 UJ	330 U	202	250	330 U
surface	1,2-Diphenylhydrazine (ug/kg)	2	0	0						1600 U	1600 U	1600	1600 U	1600 U
surface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	3	0	0						19 U	330 U	226	330 U	330 U
surface	2,4-Dinitrotoluene (ug/kg)	7	0	0						16.9 U	330 U	139	96 U	330 U
surface	2,6-Dinitrotoluene (ug/kg)	7	0	0						16.9 U	330 U	128	79 U	330 U
surface	2-Chloronaphthalene (ug/kg)	7	0	0						1.69 U	330 U	100	16 UJ	330 U
surface	2-Nitroaniline (ug/kg)	7	0	0						16.9 U	1600 U	708	96 U	1600 U
surface	3,3'-Dichlorobenzidine (ug/kg)	7	0	0						16.9 U	660 U	257	96 U	660 U
surface	3-Nitroaniline (ug/kg)	7	0	0						16.9 U	1600 U	710	110 U	1600 U
surface	4-Bromophenyl phenyl ether (ug/kg)	7	0	0						16.9 U	330 U	117	24.3 U	330 U
surface	4-Chloroaniline (ug/kg)	7	0	0						16.9 U	330 U	157	57 U	330 U
surface	4-Chlorophenyl phenyl ether (ug/kg)	7	0	0						16.9 U	330 U	110	24.3 U	330 U
surface	4-Nitroaniline (ug/kg)	7	0	0						16.9 U	1600 U	708	96 U	1600 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations Minimum	Maximum	Mean	Median	95th	Detected and Nondetected Concentrations Minimum	Maximum	Mean	Median	95th
surface	Aniline (ug/kg)	5	0	0						16.9 U	330 U	144	24.3 U	330 U
surface	Benzoic acid (ug/kg)	7	0	0						84.3 U	790 U	277	190 U	330 U
surface	Benzyl alcohol (ug/kg)	7	0	0						16.9 U	330 U	128	24.3 U	330 U
surface	Bis(2-chloroethoxy) methane (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Bis(2-chloroethyl) ether (ug/kg)	7	0	0						16.9 U	330 U	113	32 U	330 U
surface	Carbazole (ug/kg)	5	2	40	40 J	59	49.5	40 J	40 J	16.9 U	59	31.9	24.3 U	40 J
surface	Dibenzofuran (ug/kg)	7	2	28.6	20	170 J	95	20	20	16.9 U	330 U	130	24.3 U	330 U
surface	Hexachlorobenzene (ug/kg)	8	2	25	2.59 J	5.94	4.27	2.59 J	2.59 J	1.25 U	32 UJ	15.1	16.9 U	24.3 U
surface	Hexachlorobutadiene (ug/kg)	10	0	0						1.25 U	330 U	82.3	19 U	330 U
surface	Hexachlorocyclopentadiene (ug/kg)	6	0	0						16.9 U	330 U	136	24.3 U	330 U
surface	Hexachloroethane (ug/kg)	10	1	10	2.53 J	2.53 J	2.53	2.53 J	2.53 J	1.25 U	330 U	90.5	19 U	330 U
surface	Isophorone (ug/kg)	7	0	0						16 U	330 U	108	19.2 U	330 U
surface	Nitrobenzene (ug/kg)	7	0	0						16.9 U	330 U	117	24.3 U	330 U
surface	N-Nitrosodimethylamine (ug/kg)	5	0	0						84.3 U	330 U	192	121 U	330 U
surface	N-Nitrosodipropylamine (ug/kg)	7	0	0						16.9 U	330 U	131	38 U	330 U
surface	N-Nitrosodiphenylamine (ug/kg)	7	0	0						16.9 U	330 U	110	24.3 U	330 U
surface	1-Naphthylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	2-Methylpyridine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	3-Methylcholanthrene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	4-Aminobiphenyl (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Acetophenone (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	alpha,alpha-Dimethylphenethylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Benzidine (ug/kg)	2	0	0						1600 U	1600 U	1600	1600 U	1600 U
surface	Bis(2-chloroisopropyl) ether (ug/kg)	4	0	0						16.9 U	320 UJ	95.1	19.2 U	24.3 U
surface	Diphenylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Ethyl methanesulfonate (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Methyl methanesulfonate (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	N-Nitrosodibutylamine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	N-Nitrosopiperidine (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	p-Dimethylaminoazobenzene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Pentachloronitrobenzene (ug/kg)	2	0	0						1600 U	1600 U	1600	1600 U	1600 U
surface	Phenacetin (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Pronamide (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	1,1,1-Trichloroethane (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	1,1,2,2-Tetrachloroethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,1,2-Trichloroethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,1-Dichloroethane (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Vinylidene chloride (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	1,2-Dichloroethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,2-Dichloropropane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	2-Chloroethyl vinyl ether (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Benzene (ug/kg)	3	1	33.3	1.4	1.4	1.4	1.4	1.4	1 U	300 U	101	1.4	1.4
surface	Bromodichloromethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	Bromoform (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Bromomethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Carbon tetrachloride (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Chlorodibromomethane (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	Chloroethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Chloroform (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Chloromethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	cis-1,3-Dichloropropene (ug/kg)	2	0	0						4 U	4 U	4	4 U	4 U
surface	Dichlorodifluoromethane (ug/kg)	2	0	0						20 U	20 U	20	20 U	20 U

Table 2. Queried Sediment Chemistry Data.

Surface or Subsurface	Analyte	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Ethylbenzene (ug/kg)	3	0	0						1 U	300 U	101	1 U	1 U
surface	Methylene chloride (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Tetrachloroethene (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Toluene (ug/kg)	3	0	0						1 U	300 U	101	1 U	1 U
surface	trans-1,3-Dichloropropene (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	Trichloroethene (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Trichlorofluoromethane (ug/kg)	2	0	0						20 U	20 U	20	20 U	20 U
surface	Vinyl chloride (ug/kg)	2	0	0						2 U	2 U	2	2 U	2 U
surface	1,1,2-Trichloro-1,2,2-trifluoroethane (ug/kg)	2	0	0						10 U	10 U	10	10 U	10 U
surface	Ethylene dibromide (ug/kg)	2	0	0						4 U	4 U	4	4 U	4 U
surface	1,2-Dichloroethene (ug/kg)	2	0	0						1 U	1 U	1	1 U	1 U
surface	Xylene (ug/kg)	3	0	0						2 U	300 U	101	2 U	2 U
surface	Chlorobenzene (ug/kg)	2	1	50	4.6	4.6	4.6	4.6	4.6	1 U	4.6	2.8	1 U	1 U
surface	1,2-Dichlorobenzene (ug/kg)	7	3	42.9	4.8	1700 J	576	22	22	2 U	1700 J	256	19.2 U	24.3 U
surface	1,3-Dichlorobenzene (ug/kg)	7	0	0						2 U	32 UJ	16.5	19 U	24.3 U
surface	1,4-Dichlorobenzene (ug/kg)	7	2	28.6	4.8	530	267	4.8	4.8	2 U	530	88	19 U	24.3 U
surface	1,2,4-Trichlorobenzene (ug/kg)	7	0	0						16.9 U	330 U	117	24.3 U	330 U
surface	1,2,4,5-Tetrachlorobenzene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
surface	Pentachlorobenzene (ug/kg)	2	0	0						330 U	330 U	330	330 U	330 U
subsurface	Lead (mg/kg)	1	1	100	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
subsurface	Acenaphthene (ug/kg)	1	1	100	55	55	55	55	55	55	55	55	55	55
subsurface	Acenaphthylene (ug/kg)	1	1	100	49	49	49	49	49	49	49	49	49	49
subsurface	Anthracene (ug/kg)	1	1	100	130	130	130	130	130	130	130	130	130	130
subsurface	Fluorene (ug/kg)	1	0	0						50 U	50 U	50	50 U	50 U
subsurface	Naphthalene (ug/kg)	1	1	100	58	58	58	58	58	58	58	58	58	58
subsurface	Phenanthrene (ug/kg)	1	1	100	390	390	390	390	390	390	390	390	390	390
subsurface	Low Molecular Weight PAH (ug/kg)	1	1	100	682 A	682 A	682	682 A	682 A	682 A	682 A	682	682 A	682 A
subsurface	Dibenz(a,h)anthracene (ug/kg)	1	1	100	63	63	63	63	63	63	63	63	63	63
subsurface	Benz(a)anthracene (ug/kg)	1	1	100	380	380	380	380	380	380	380	380	380	380
subsurface	Benzo(a)pyrene (ug/kg)	1	1	100	830	830	830	830	830	830	830	830	830	830
subsurface	Benzo(b)fluoranthene (ug/kg)	1	1	100	660	660	660	660	660	660	660	660	660	660
subsurface	Benzo(g,h,i)perylene (ug/kg)	1	1	100	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
subsurface	Benzo(k)fluoranthene (ug/kg)	1	1	100	220	220	220	220	220	220	220	220	220	220
subsurface	Chrysene (ug/kg)	1	1	100	530	530	530	530	530	530	530	530	530	530
subsurface	Fluoranthene (ug/kg)	1	1	100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
subsurface	Indeno(1,2,3-cd)pyrene (ug/kg)	1	1	100	590	590	590	590	590	590	590	590	590	590
subsurface	Pyrene (ug/kg)	1	1	100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
subsurface	Benzo(b+k)fluoranthene (ug/kg)	1	1	100	880 A	880 A	880	880 A	880 A	880 A	880 A	880	880 A	880 A
subsurface	High Molecular Weight PAH (ug/kg)	1	1	100	7673 A	7673 A	7670	7673 A	7673 A	7673 A	7673 A	7670	7670 A	7673 A
subsurface	Polycyclic Aromatic Hydrocarbons (ug/kg)	1	1	100	8355 A	8355 A	8360	8355 A	8355 A	8355 A	8355 A	8360	8360 A	8355 A
subsurface	Diesel fuels (mg/kg)	1	0	0						50 U	50 U	50	50 U	50 U
subsurface	Lube Oil (mg/kg)	1	0	0						100 U	100 U	100	100 U	100 U
subsurface	Natural gasoline (mg/kg)	1	0	0						20 U	20 U	20	20 U	20 U
subsurface	Benzene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Ethylbenzene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Toluene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U
subsurface	Xylene (ug/kg)	1	0	0						300 U	300 U	300	300 U	300 U

SUPPLEMENTAL FIGURES

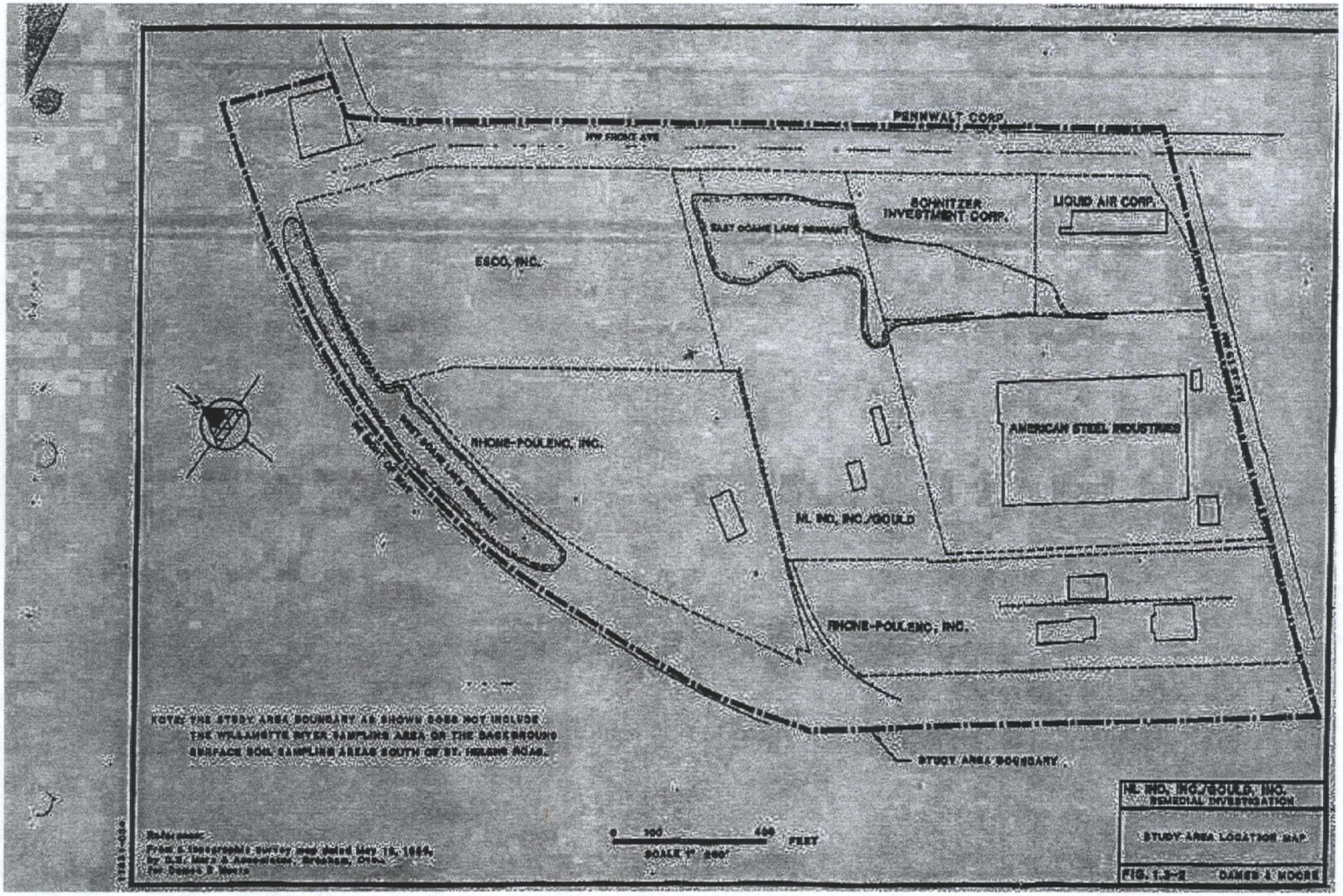
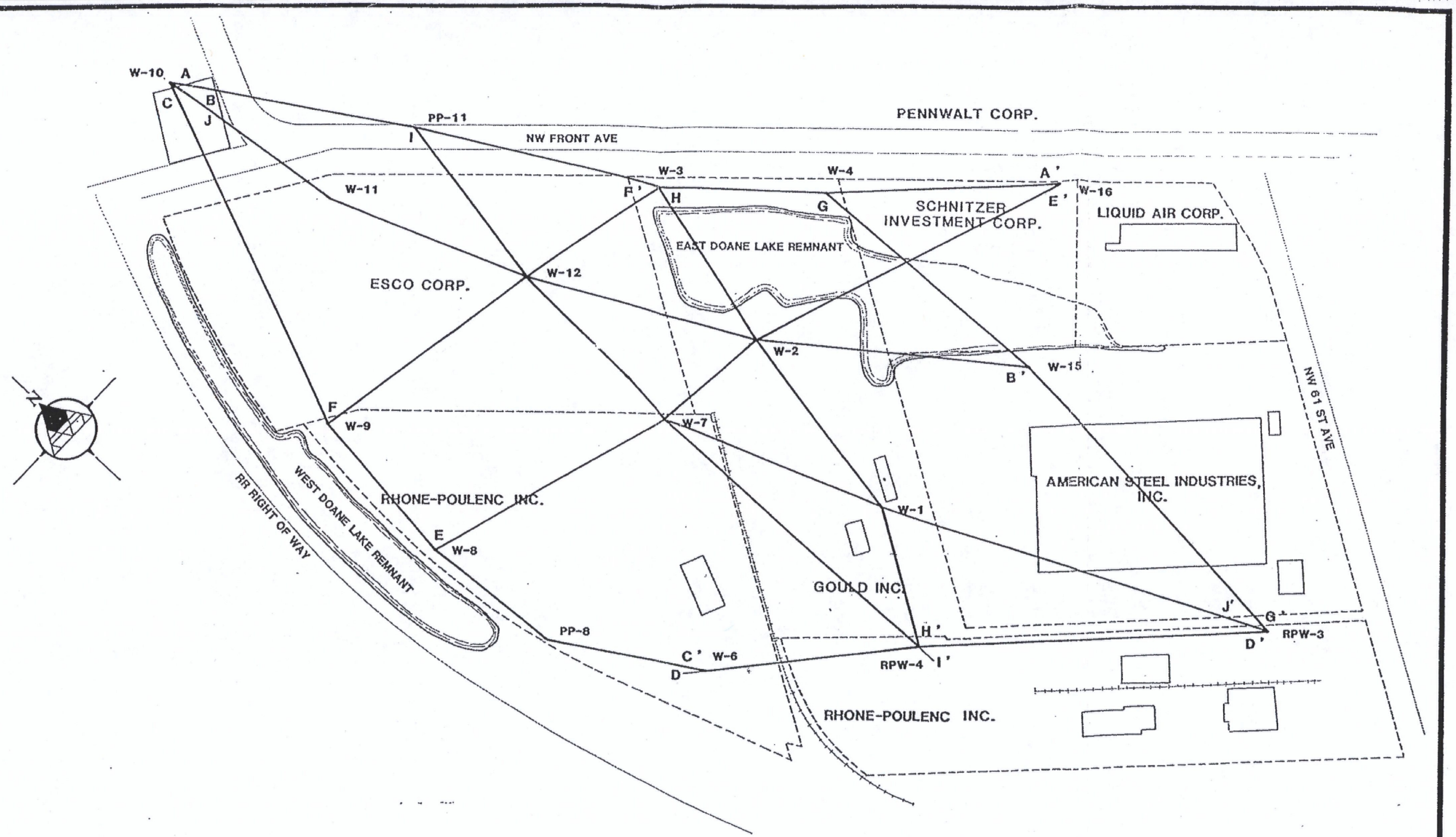


Figure 1.3-2.doc



Reference:
From a topographic survey map dated May 18, 1986,
by D.E. Marx & Associates, Gresham, Ore.,
for Dames & Moore

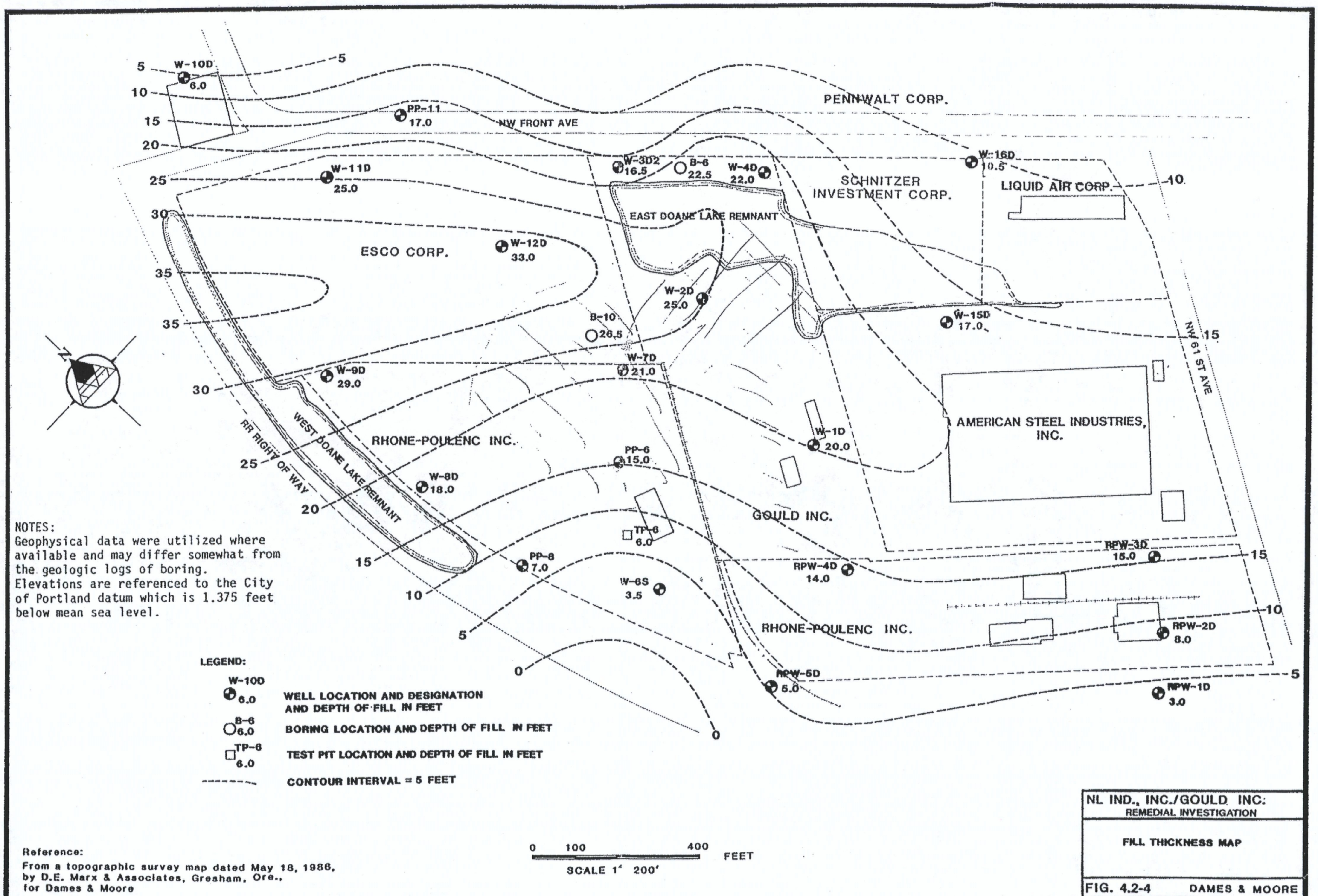
0 100 400 FEET
SCALE 1" 200'

NL IND., INC./GOULD, INC.
REMEDIAL INVESTIGATION

CROSS-SECTION LOCATION MAP

FIG. 4.2-3 DAMES & MOORE

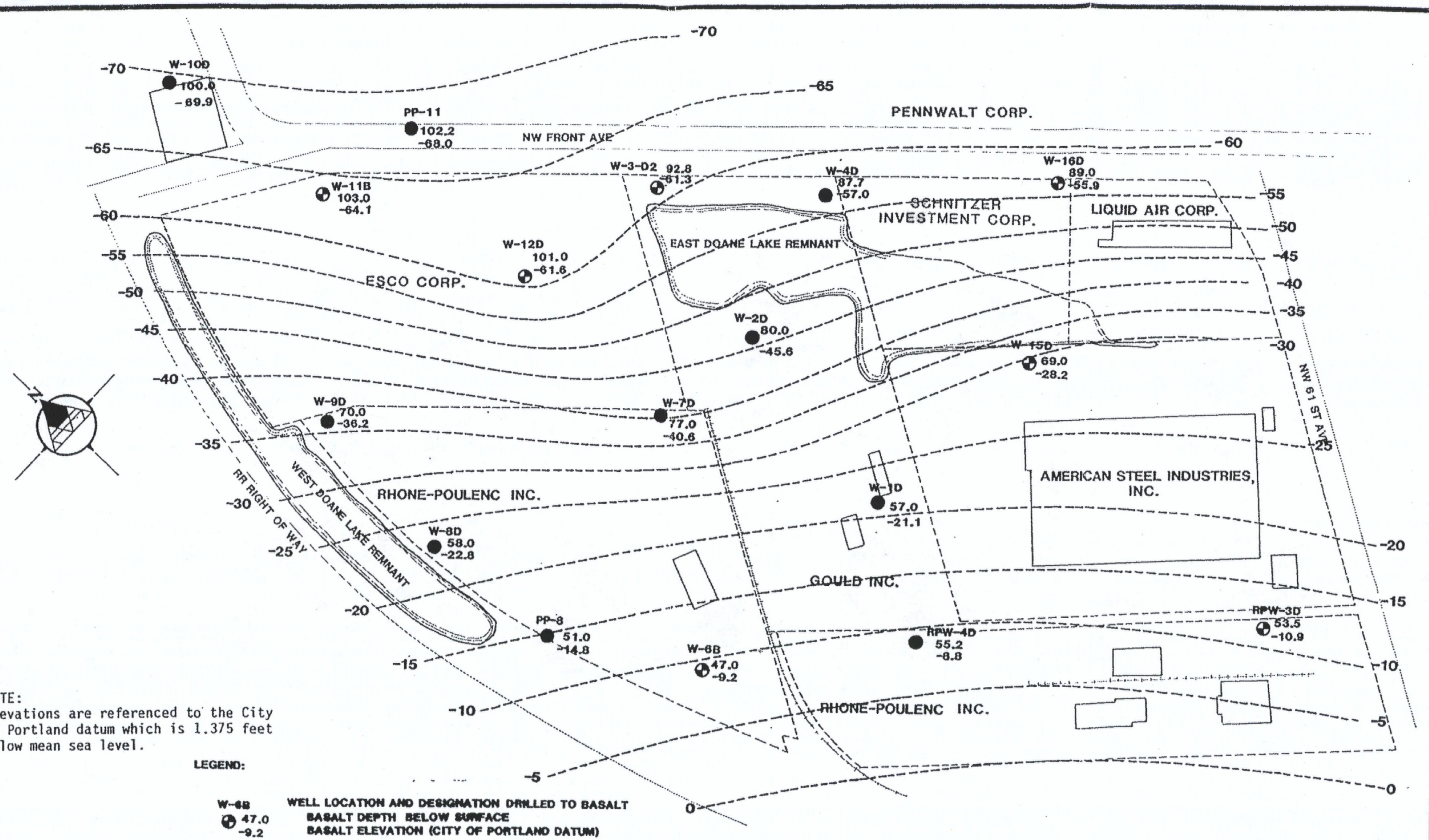
11831-034



NL IND., INC./GOULD INC.
REMEDIAL INVESTIGATION

FILL THICKNESS MAP

FIG. 4.2-4 DAMES & MOORE



NOTE:
Elevations are referenced to the City of Portland datum which is 1.375 feet below mean sea level.

LEGEND:

W-6B 47.0 -9.2 — WELL LOCATION AND DESIGNATION DRILLED TO BASALT
BASALT DEPTH BELOW SURFACE
BASALT ELEVATION (CITY OF PORTLAND DATUM)

● — WELL NOT DRILLED TO BASALT
BASALT DEPTH AND ELEVATION FROM CROSS-SECTIONS

CONTOUR INTERVAL = 5 FEET

11831-034

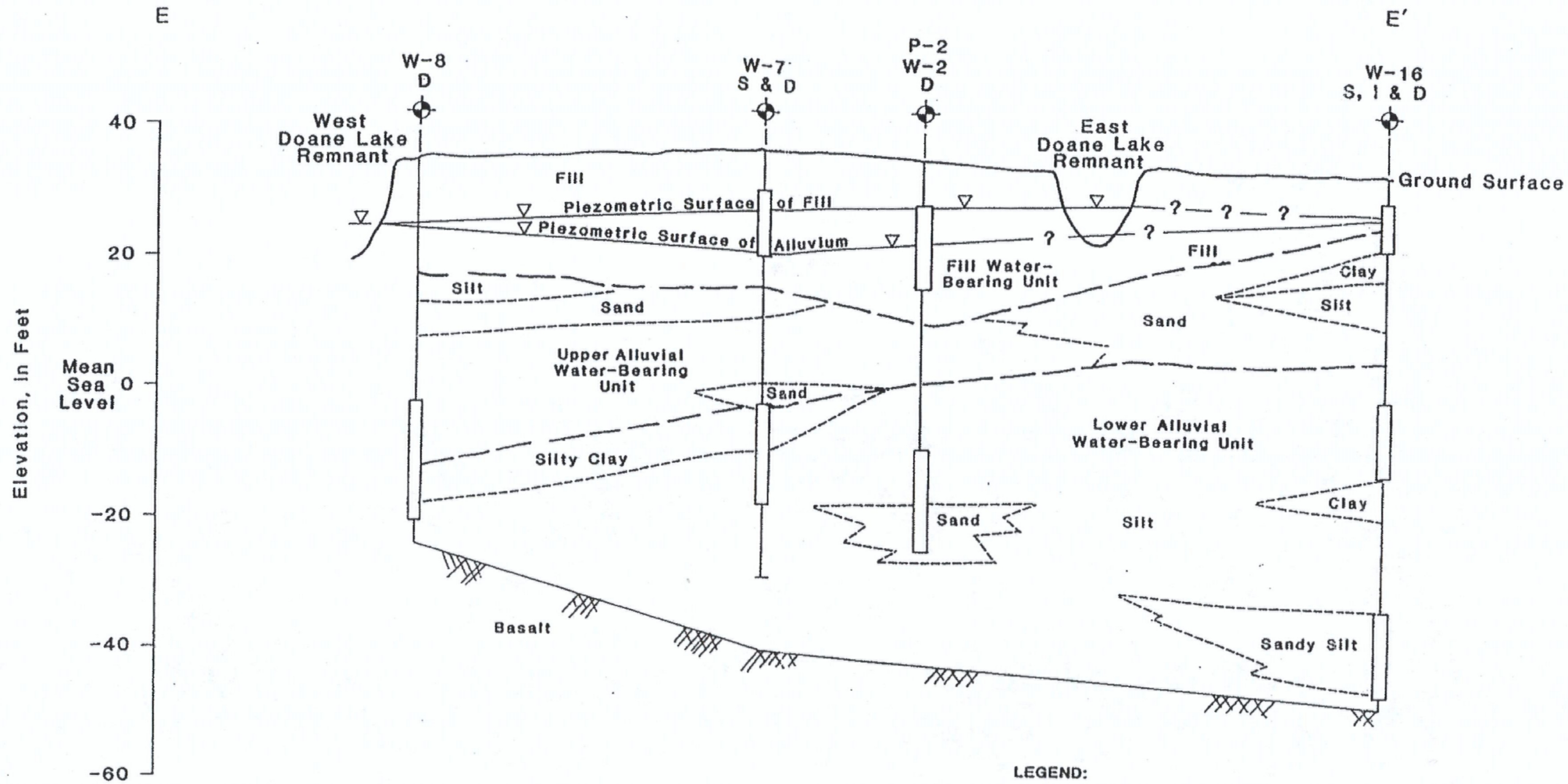
Reference:
From a topographic survey map dated May 18, 1986, by D.E. Marx & Associates, Gresham, Ore., for Dames & Moore

0 100 400 FEET
SCALE 1" 200'

NL IND., INC./GOULD INC.
REMEDIAL INVESTIGATION

TOP OF BASALT

FIG. 4.2-5 DAMES & MOORE



NOTES:
Water levels measured on October 23, 1986.

Soil unit contacts between borings are inferred and generalized. In nature, they are probably gradational and interfingering.

Stratigraphic (soil) units shown at boring locations are based on electrical resistivity logs where available and may differ from the geologic logs of borings.

The top of basalt where not encountered by drilling is inferred from contour maps and geologic cross-sections.

Cross-section location is shown on figure 4.2-1.

KEY TO WELL DIAGRAM:

W-7 — WELL NAME
S & D — DEPTH DESIGNATION
WELL LOCATION

EXPLANATION OF DEPTH DESIGNATIONS

S — SHALLOW
I — INTERMEDIATE
D — DEEP
B — BASALT

SAND PACK ZONE AROUND WELL SCREEN

BOTTOM OF BORING

LEGEND:

INFERRED CONTACT OF WATER BEARING ZONES

INFERRED CONTACT BETWEEN STRATIGRAPHIC UNITS

PIEZOMETRIC SURFACE

EQUIPOTENTIAL LINE

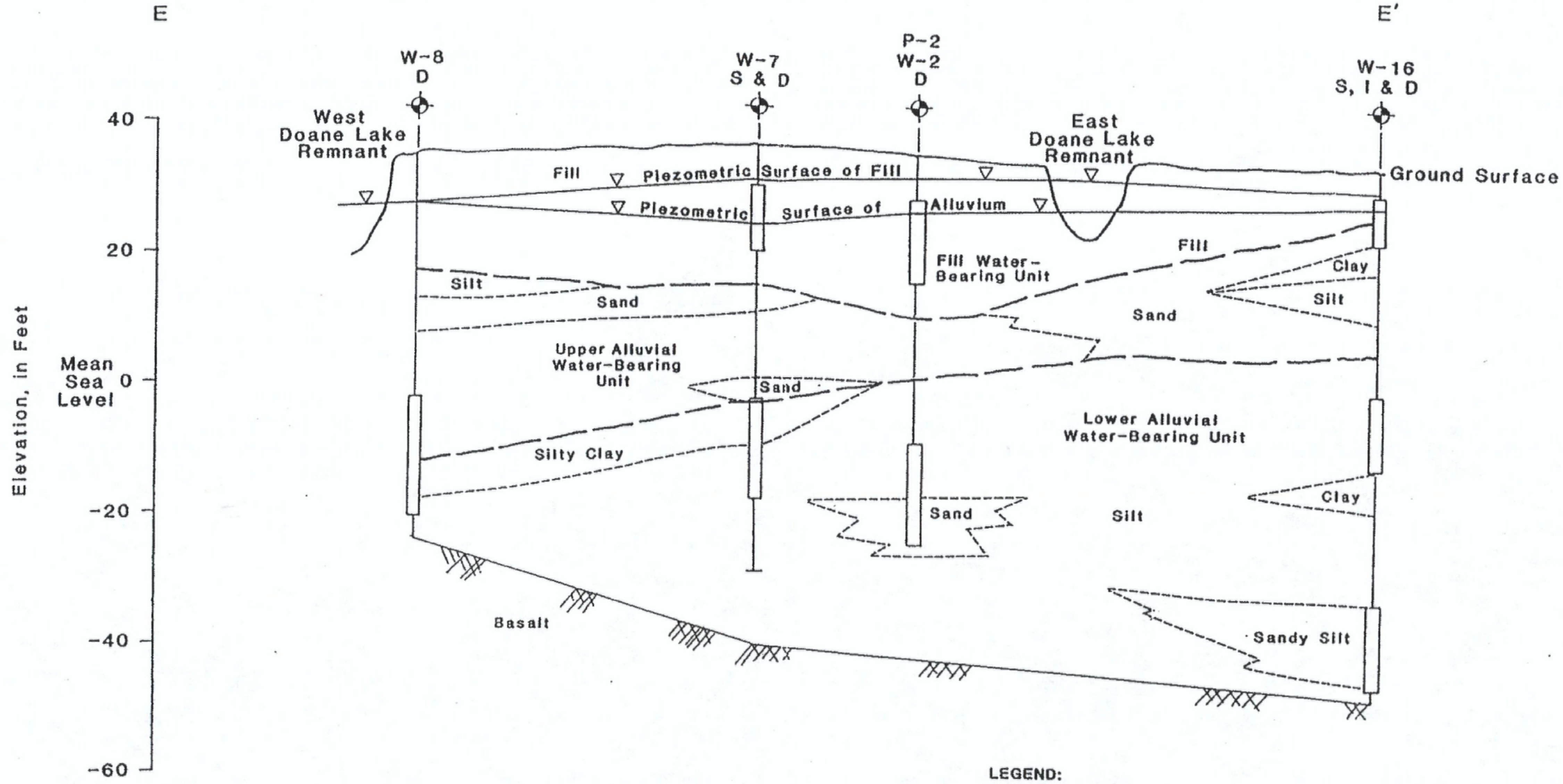
K_H HORIZONTAL HYDRAULIC CONDUCTIVITY (CM/SEC)

NL IND., INC./GOULD, INC.
REMEDIAL INVESTIGATION

CONCEPTUAL HYDROGEOLOGIC CROSS-SECTION E-E′
OCTOBER 23, 1986

Fig. 4.4-5 DAMES & MOORE

Job No. 11831-034



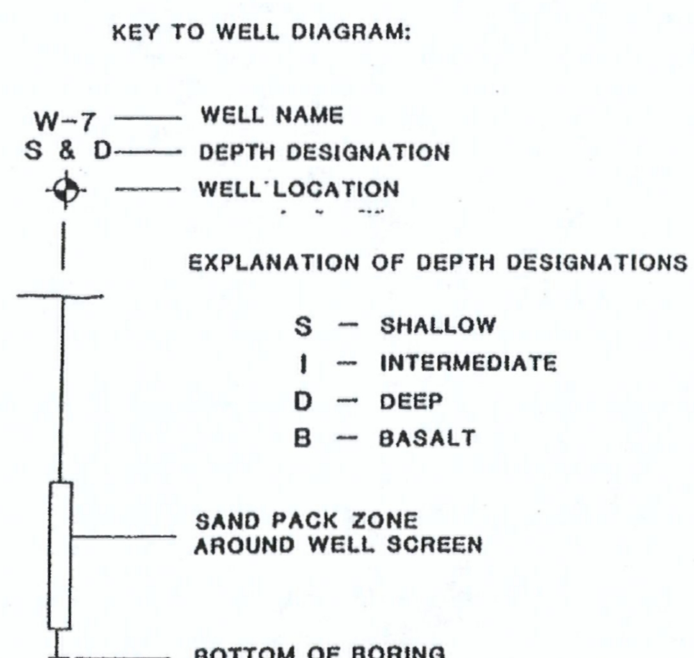
NOTES:
Water levels measured on February 3, 1987.

Soil unit contacts between borings are inferred and generalized. In nature, they are probably gradational and interfingering.

Stratigraphic (soil) units shown at boring locations are based on electrical resistivity logs where available and may differ from the geologic logs of borings.

The top of basalt where not encountered by drilling is inferred from contour maps and geologic cross-sections.

Cross-section location is shown on figure 4.2-1.



LEGEND:

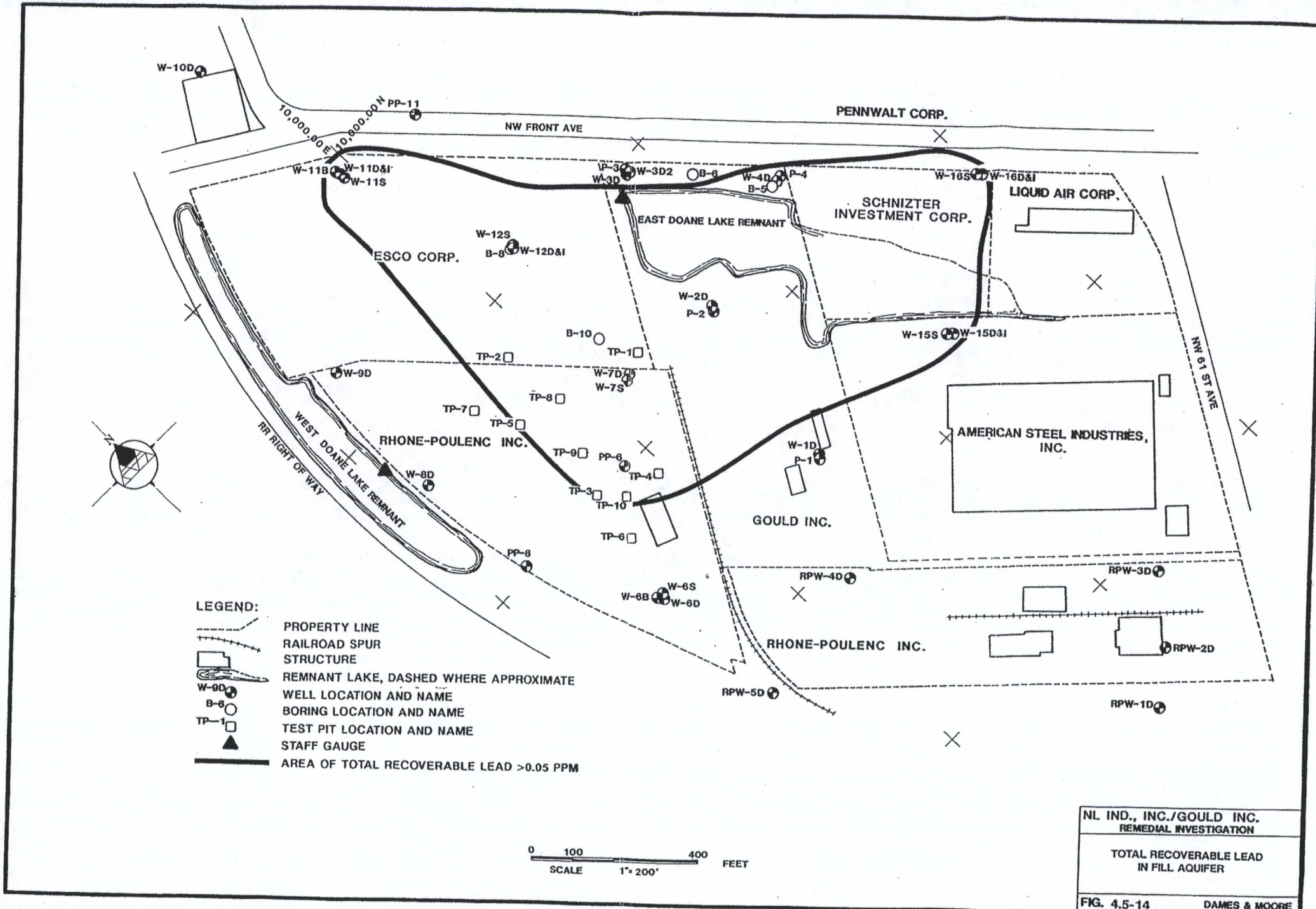
- INFERRED CONTACT OF WATER BEARING ZONES
- INFERRED CONTACT BETWEEN STRATIGRAPHIC UNITS
- PIEZOMETRIC SURFACE
- EQUIPOTENTIAL LINE
- K_H HORIZONTAL HYDRAULIC CONDUCTIVITY (CM/SEC)

NL IND., INC./GOULD, INC.
REMEDIAL INVESTIGATION

CONCEPTUAL HYDROGEOLOGIC
CROSS SECTION E-E'
FEBRUARY 3, 1987

Fig. 4.4-6 DAMES & MOORE

Job No. 11831-034


W-10D
PP-11
10,000.00 E
10,800.00 N
NW FRONT AVE
PENNWALT CORP.
W-11B
W-11D&I
W-11S
P-3
W-3D
W-3D2
B-6
W-4D
P-4
B-5
W-16S
W-16D&I
LIQUID AIR CORP.
SCHNIZTER
INVESTMENT CORP.
EAST DOANE LAKE REMNANT
W-12S
B-8
W-12D&I
ESCO CORP.
W-2D
P-2
B-10
TP-1
TP-2
W-15S
W-15D&I
NW 61 ST AVE
W-9D
W-7D
W-7S
TP-8
TP-7
TP-5
AMERICAN STEEL INDUSTRIES, INC.
RHONE-POULENC INC.
WEST DOANE LAKE REMNANT
RR RIGHT OF WAY
W-1D
P-1
TP-9
PP-6
TP-4
W-8D
TP-3
TP-10
GOULD INC.
TP-6
PP-8
RPW-4D
RPW-3D
W-6S
W-6B
W-6D
RHONE-POULENC INC.
RPW-2D
RPW-5D
RPW-1D
N
LEGEND:
PROPERTY LINE
RAILROAD SPUR
STRUCTURE
REMNANT LAKE, DASHED WHERE APPROXIMATE
W-9D
WELL LOCATION AND NAME
B-6
BORING LOCATION AND NAME
TP-1
TEST PIT LOCATION AND NAME
STAFF GAUGE
AREA OF TOTAL RECOVERABLE LEAD >0.05 PPM
0
100
400
SCALE
1" = 200'
FEET
NL IND., INC./GOULD INC.
REMEDIAL INVESTIGATION
TOTAL RECOVERABLE LEAD
IN FILL AQUIFER
FIG. 4.5-14
DAMES & MOORE

11831-034